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THE REIGN OF RELATIVITY

BY VISCOUNT HALDANE

THE PATHWAY TO REALITY

The Gifford Lectures delivered in the University of St. Andrews. First Series, 1902–3. Second Series, 1903–4.

THE CONDUCT OF LIFE

AND OTHER ADDRESSES.

UNIVERSITIES AND NATIONAL LIFE

Three Addresses to Students.

HIGHER NATIONALITY

A Study in Law and Ethics. An Address delivered before the American Bar Association at Montreal on September 1, 1913.

LONDON: JOHN MURRAY

THE
REIGN OF RELATIVITY

BY VISCOUNT HALDANE

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PREFACE TO THE THIRD EDITION

In this edition I have, in the first place, made a few textual emendations, in themselves unimportant. But at one place new matter of a more serious kind has been introduced. Since the book was written Professor Einstein has been in London, and it has been my good fortune to have had opportunities for conversation with him. The philosophical doctrine of the text of course lies outside the domain to which he has confined himself. I have, however, under the stimulus of my talk with him, added, to come in at p. 84, several fresh paragraphs which develop more definitely than was done in the original edition the interpretation which I have put on a basic principle in modern mathematical physics on which, in agreement with Minkowski, Einstein has, as it seems to me, rested his reasoning about relativity. This addition I have ventured to make because the point with which it is concerned appears to be one belonging quite as much to the theory of knowledge as to mathematics. The language used is my own and not Professor Einstein's, and he is in no way responsible for my mode of statement. But I have introduced nothing fresh in point of principle. I have simply sought to clear up what for some readers has proved an obscurity, in words which may assist in rendering intelligible the answer to a question they have been asking.

HALDANE.

LONDON,
July 1921.

PREFACE

THE topics of this book are Knowledge itself and the relativity of reality to the character of Knowledge. Some of the questions considered in the book are more than two thousand years old. That fact need not disturb us. For there appears to have been steady progress in the forms of the answers which have gradually been evolved. If the substance of these turns out to be more akin to doctrines originally produced by the Greeks than we had expected to find, that again need not disturb us. It would not trouble us in the case of literature or art, and we have to learn to study philosophy, and even to a considerable extent science, as we study these, with the circumstances and language of the particular period steadily kept in our view. To say this does not mean that we are to treat lightly either truth itself or the imperative necessity for exactness in its statement. But it does mean that we must have in mind that truth in its full significance imports quality as much as it imports quantity, and therefore variety in standard. We have read the history of human endeavour in its many aspects to little purpose if we have not learned this.

The subject discussed involves reference to metaphysical inquiry. I regret that this has to be so, for metaphysical discussions are not popular in the world as it is at present. But that world is casting about in search of a basis on which gradually to build up renewed faith. If it continues in earnest in its searchings I believe that it will find in the end that it is not possible to shirk encountering philosophy in some shape. I can only say that I have tried to assist the general reader to realise the single principle on which the book is based and built up, by putting that principle before him in the variety of its applications. I have been fully aware that for those

specially trained in the various branches of inquiry touched on this has involved some repetition. But the protean form in which the principle appears where least expected afforded justification for my concern lest I should have failed at any point to drag it out for continuous recognition.

Some sixteen years since, I published Gifford Lectures, delivered at the University of St. Andrews. These appeared in two volumes which bore the title of *The Pathway to Reality*. Through the two volumes there ran a thread which remains intact in the present book: the principle of degrees in knowledge and reality alike. But since the two volumes were written much new knowledge has come into existence, and the treatment has been consequently refashioned. The remarkable ideas developed by Einstein, as the result of his investigation of the meaning of physical measurement, have provided fresh material of which philosophy has to take account. These, and yet other ideas which are affecting the scientific outlook profoundly, have appeared to me to call for a fresh route of approach to a view of nature towards which philosophical reflection was already being impelled. The advantage which the methods of science possess is that by them results can be reached and formulated with a precision that is unrivalled, so far as they can go. A price for this advantage has, however, to be paid, and science is apt to find itself in strange regions if it does not limit its scope with genuine self-denial. The inquiry entered on by Einstein has, perhaps because of the presence to his mind of something like this reason, stopped short in his hands of the general problem of the Relativity of all Knowledge. The question that remains is whether the investigation of that problem can be carried further, and if so, whether the philosophical method which appears to be required is a reliable one. The answer I venture to offer to the question is contained in the pages that follow.

The subject is one that has occupied me for many years; over forty, I think. During much of that period I have had other and pressing calls on my time, calls both of an official and a non-official nature. But if on occasions the general significance of knowledge has had to be relegated to the background, it has throughout

been in my thoughts. On the day of my release from office as Lord Chancellor in 1915, I projected this book on Relativity, and it is now finished, for what it is worth. I part from it as from a child whom I have watched over and brought up, and who has occupied a foremost place in my affections. The volume, such as it is, now goes out into a world where it remains to be seen whether it will be received well, or received at all.

HALDANE.

LONDON,
April 1921

TABLE OF CONTENTS

PART I—THE PROBLEM OF RELATIVITY

CHAPTER I

INTRODUCTORY

The changing attitude towards religion, politics, and literature. The absence of settled conviction in the public mind is the result of reflection and can be made good only by reflection. There seems to be no reason for misgiving. But it is not the less important to seek out foundations on which faith can be rested. These foundations must in the end be mainly spiritual in character, in the comprehensive sense of the word "spiritual," and co-operation in the inquiry between the various classes of spiritual reformers is therefore important. A great obstacle to such co-operation is the sense that there is little harmony between the various phases of knowledge. Can such harmony be established? A scrutiny of the history of reflective thought, if it makes more allowance than is usual for relativity in the standpoints of the different orders of thinkers, seems to suggest that the great systems are not really in such conflict as is currently imagined. The history of philosophical thought is no record of mere supersession of opinions. It is rather the exhibition of advance in ideas which have been antagonistic mainly in their one-sided expression. If we apply the historical method over sufficient periods of time, we discover continuity in progress little broken, provided that we bear in mind the influence of relativity in the successive standpoints which the narrative discloses. Relativity of this kind must always be taken into account, for it bears on the real significance of truth. Truth implies more than the mere agreement of an idea with something treated as having an independent existence apart from it. The test may require an adequacy more complete, and may have to take account of standpoint and include value as well as measurement. . . . pp. 3–15

CHAPTER II

THE DOMAIN OF SCIENCE

There is some analogy between the methods of science and those of art, for both require the use of symbols, although their standpoints are quite different. The disposition to-day in the domain of science is to search for and detect unconsciously made assumptions. The Victorian idea of reality as coming under two distinct phases, one objective and self-subsistent, and the other only subjective and for science negligible, is an illustration of this kind of assumption. The tendency of the new century

is to relegate that idea to the lumber-room, and to regard the universe in all its phases as an entirety. The Victorians really inherited their idea from Locke, though Kant had partially superseded this idea, had they but understood what he did. Modern science looks on meaning as inseparable from experience. Kant's own shortcomings. He still sought to get behind the final fact of knowledge, and this cannot be done. We cannot resolve it into anything beyond itself; we can only observe and study it in its self-development. If we do so, we find that our perplexities have arisen from taking it to be merely an attribute or instrument of a thing called a self. This is an idea which is only relatively admissible, and will land us in difficulties if employed without restraint. The actual character of experience. The distinction between knower and known is one that truly falls within knowledge. Each is as real as the other within the entirety of knowledge, to which both belong. Knowledge as a whole is itself the final fact behind which we cannot get. But it has forms and stages within it characterised by their relativity.

pp. 16–32

CHAPTER III

RELATIVITY AND WHAT IT MEANS

The antiquity of the principle of relativity. Its acceptance by modern science. The far-reaching importance of this acceptance, and the meeting over it of science with philosophy. The various meanings of relativity. The expression as used in this book. The real nature of knowledge. How Kant approached the subject. The confusion latent in the question as to the origin of knowledge. The way in which the principle of relativity is now formulated by physicists. Entities and their relations. The method of abstraction as employed in mathematics. Why our knowledge appears in experience as conditioned. Its early stages. Space and time. Newton and Einstein. All that the physicist can actually observe is variation and coincidence in the situations of things relatively to each other. Of force physics can form no notion. The relative character of space and time. Coincidences of events as studied in physical science. Events imply interpretation as essential to their actual nature, and in this sense and to this extent are of a mental character. The relation of the general to the particular in knowledge. What is actual contains both, and this is the key to the nature of knowledge and of its object. The explanation applies in art and in estimates of value as much as in science. The ultimate character of knowledge itself. pp. 33–50

CHAPTER IV

RELATIVITY IN AN ENGLISH FORM

The revolution in physical conceptions made by Einstein. Motion and rest. Gravitation. The British Astronomical Expedition of 1919. The basic controversy. Inertia and Energy. Diverging views about the principle of relativity. Moritz Schlick. Whitehead. The latter's position as a logician. The conclusions to which he has brought himself. Analysis of his theory. "Events" and their "passage." "Objects." The method of "Extensive Abstraction." The larger issue raised by the fresh view of relativity set forth in Professor Whitehead's books.

pp. 51–81

CHAPTER V

EINSTEIN

The genesis of Einstein's discovery of the special and general principles of relativity in physics. Measurement. The elimination of force as a concept in physics. Action at a distance. The relation of phenomena as observed to the space-time continuum. The "world-line," and the inseparability in it of the spatial from the temporal. The significance of Einstein's physical theories for philosophy. The metaphysics of Tensors. Euclidean space. Professor Eddington's suggestions about the relation of mind to nature. Comparison with the Hamiltonian theory of Representative Perception. The ultimate physical basis. Riemann, Freundlich, and Schlick on the ultimate ground of the continuum. Contrast with the views of Professor Whitehead. The controversy is superseded if we cease to hypostatise nature into something of a different character from mind, and give up insisting on disjoining particular from universal in our experience. Relation to mind is essential for the existence of nature, for apart from such a relation congruence would be unintelligible. Professor Whitehead's logical methods seem to guide him towards this result. It constitutes a difference between his view and the merely physical theory of Einstein, and the question the former raises is inevitable. It really, however, belongs to the domain of philosophy. Bergson on the spatialisation of time and the fourth dimension. Gauss, Riemann, and Minkowski at Göttingen. The doctrine of relativity in physical measurement leaves several questions to be answered, including one as to the character of the universe in which we have our place. It opens up possibilities of knowledge of a new kind. . . . . pp. 82–122

CHAPTER VI

RELATIVITY IN EXPERIENCE GENERALLY

Einstein's principle of the relativity of measurement in space and time cannot be taken as isolated. It has its counterpart in the other domains of nature and of knowledge. For, however we may interpret it, there remains before us the basic principle that knowledge everywhere enters into reality with transforming power. Illustrations from biology. The meaning of "cause"; its relation to the concept of "end." The contrast between end and conscious purpose in the intelligent organism. The doctrine of degrees or levels in reality and knowledge, and of their relations to each other. All the sciences belong to one entirety, and all their methods are required for the interpretation of experience. What science owes to philosophy. It turns out that observer and observed everywhere stand as inseparable in fact as well as in logic. Knowledge is of differing kinds, and what determines these kinds is the standards employed. They belong to different orders, as we find in the observation of a mind or a living organism when contrasted with the observation of a machine. The conception employed takes the place in the former of the co-ordinates of reference used in the case of the latter. Mind, when the abstractions we make are allowed for, includes the whole of these within its entirety. The inherent tendency of knowledge towards self-completion. Illustrations of this tendency. The full explanation has always in the end to be from above downwards. The true character of

mind, and the way in which knowledge becomes relative. The finite self and the object-world from which it is distinguished. The outlook is really larger than that in which realism is differentiated from idealism. It is in consequence of abstractions made to serve practical purposes that the limited forms of knowledge arise. The meaning of truth. Knowledge is something more than an instrument applied *ab extra*, and its various forms require investigation in detail of appropriate kinds. pp. 123–146

PART II—THE METAPHYSICAL FOUNDATION OF RELATIVITY

CHAPTER VII

THE SELF IN KNOWLEDGE

My knowledge of myself as included in my object-world is a fact as obvious as it is extraordinary. The difficulty in understanding it arises from my having taken my mind to be a thing of which my knowledge is a property. This cannot be true, for the distinction of my mind from its object appears on scrutiny to be the result of reflection from a partial standpoint. I turn out to be more than at first sight I took myself to be. In my experience subject and object are never separated, but are at every point mutually implied. They are not independent entities, but the outcome of points of view which may be only relatively true. These give me different kinds of objects, and of concepts through which they are interpreted. When I say "I" the concept employed is, and must be, of the character of a universal, and of general application. For other men say "I" with identically the same meaning. Their bodies and experiences and histories are different from mine, and in respect of these we are independent beings. But we think correspondingly in a correspondence that is based on identity in concepts. These are not occurrences in time, but are the very same thoughts despite their differences in detail. Reality itself and the distinction between dreams and apprehension of what is actual depend on this. The relation of knowledge to my organism. I know what other people feel only by knowing what they think. Interpretation through concepts. The Leibnitzian monad. The meaning of the identity of the world we all perceive. Mind and body represent, not different entities, but different orders in experience. The unreality of both universal and particular when taken in isolation. The real is individual and never static. The relation of personality to organic life. The finite centre. The range of reflection is unlimited, notwithstanding that my mind is conditioned by having to express itself in my organism. I am no mere object in an external nature. The character of the self, and the interpretation of its finiteness. The tendency of experience towards self-completion. Mind finds mind even in forms that have aspects belonging to externality. . . . pp. 149–172

CHAPTER VIII

MEANING AS ENTERING INTO REALITY

The "I," with my reference of my experience to it, is the foundation of congruence in the various forms of that experience. The difficulty felt in accepting this view arises from the tendency to separate the self

from the object-world in its knowledge. We have to do this for practical purposes, but the interpretation so obtained is only relatively true. The differentiations made within the entirety of knowledge. The meaning of finiteness as characterising the self. Symbolism. Summary of the position reached in the discussion. The terminology of metaphysics. How meaning is essential for reality. The necessity of adequate concepts for the apprehension of the real. The principle of degrees. How knowledge itself must be studied. The view put forward is really no new one, but as old as Greek philosophy. Truth and value. The differences between individuals. To imagine that there can be numerically different universes is to imagine what is meaningless. For knowledge depends on identity of the concepts in which any universe arises. Knowledge is no arbitrary procedure. It unfolds its own character. There is no properly statable problem of the genesis of knowledge, and reality is always conceptual, and of the character of a concrete universal in which a relation of object to subject is implied.

pp. 173–192

CHAPTER IX

APPEARANCE AND REALITY

It is only metaphorically that we can speak of nature as closed to mind. Our intelligence is presented as finite and as confronted by nature, but that intelligence turns out to be more than it takes itself to be, and to this fact the principle of degrees is the key. The character of finite knowledge. The implications of the conception of personality. Our point of departure is the "*this*," in which we are here and now, but it is only a point of departure for the activity of reflection, although the world is there independently of our particular minds. The beginning in time of knowledge. The treatment of thought in books on logic. The full character of thought, and its tendency to search for the whole. Criticism of the views of Mr. F. H. Bradley, Professor Bosanquet, and Professor Pringle-Pattison. Cardinal Newman. The Hegelian "Phenomenology." Summary of the chapter—The meaning of divine immanence. Relativity in this connection. . . . pp. 193–219

CHAPTER X

MANIFOLD ORDERS IN KNOWLEDGE

In the same individual phenomenon there are present a variety of degrees in knowledge. Our thinking takes place by imagery, in which multitudinous concepts are implicit. The consideration of what we pass by as merely inorganic nature illustrates this. Symbols. The use and abuse of metaphor. The difficulty of its employment in philosophy, although that employment is unavoidable. The example of our language about death. The view of the self required for the doctrine of degrees. Evolution. Darwin free from the characteristic failing of the Victorians. Knowledge and instinct. The dialectical tendency in explanation. Goethe. Mysticism. What we presuppose in our knowledge. The hypostatisation of conceptions into images supposed to be exhaustively descriptive. The far-reaching influence of relativity. Illustration from the controversy

about free-will. The doctrine of degrees lays many spectral appearances. All adequate explanation is from the concrete to the abstract, and from above to below. . . . . pp. 220–239

PART III—OTHER VIEWS ABOUT THE NATURE OF THE REAL

CHAPTER XI

GREEK PHILOSOPHY

The temptation to read too much into Greek Philosophy. One of its attractions is its freedom from modern obsessions. Its abiding character. Its deliverance from the difficulty which has led in modern times to the separation of knower from known, and to subjective idealism. Aristotle's relation to Plato. Form and matter. The relation of the principle of Becoming in Aristotle to the doctrine of degrees. The obscurities in his presentation of his principle, and the consequent divergences between his commentators. But Aristotle did insist that the relation between percipient and perceived was the creation of knowledge itself. He was not embarrassed by the modern tendency to reduce all conceptions to those of externality and cause and substance. The principle of degrees is implied in his system. The *De Anima* and the *Metaphysics*. His view of mind. The price we have paid for getting beyond Aristotle, and the defects of his view of the world. Knowledge as foundational in his system. The conflict of views in it about Logic and Metaphysics. Comparison between the systems of Aristotle and Plotinus. The personality of the latter. Neither ever got rid of a certain tendency to dualism. The great value to us of Greek thought is its insistence that no view is sufficient which excludes any important aspect in which reality and the truth about it can be presented. The ethical shortcoming of Hellenism. pp. 243–264

CHAPTER XII

NEW REALISM

The effort of New Realism to confine itself to the methods of science. The various schools of New Realists agree in attributing self-subsistence apart from knowledge to a non-mental world. Differences in the views of these schools. The domination in New Realism of the category of substance. The inclusion of universals in the non-mental world. Its view of consciousness. The barrier it puts in the path of subjective idealism. Professor Alexander. Mr. Bertrand Russell on the relations between logic and mathematics. Number. The possible relation of New Realism to biology. Ought not the New Realists in consistency to claim that morals, beauty, and religion also all of them belong to the non-mental world ? Is not the distinction between this and the mental world a disappearing one, and have they not proved too much ? What mind really is. . . . . pp. 265–291

CHAPTER XIII

REALISM AND IDEALISM

The deflection of the view of New Realism about reality has its parallel in that of Subjective Idealism, with consequent aspects due to relativity in outlook. How Locke was led into a snare by a metaphor. His view of mind as a thing and of knowledge as an instrument. Epistemology and the "two substance" theory. Berkeley was launched in consequence on a slippery slope, down which Hume conducted philosophy to a precipice. They all three treated mind as "substance." Thomas Reid's great service in rejecting the doctrine of "representative perception." "Common sense" as he conceived it. Kant carried the criticism of the "substance" doctrine still further. His view of knowledge. It is presupposed in all experience. His limited conception of the categories and of space and time. The *Critique of Judgment*. The revolution in thought which Kant effected. The defects in his system. The diverging attitudes of the schools which succeeded him. The possibility of access to the "thing-in-itself" through direct awareness. Schopenhauer. The reasons why he founded no school. His personality. His system. His relation to Bergson's principle. The real divergence of the latter from Kant. The true nature of mobility. It is against the limitations of Kant's mechanistic view of the categories that Bergson's great point is really made. His originality in the statement of this. He actually relies on intelligence and assumes it as presupposed in his view of reality. An American critic of Bergson. "Creative finalism." Time. The relation of Bergson to Bradley . . . . . pp. 292–316

CHAPTER XIV

AN AMERICAN CRITICISM OF BERGSON

Notwithstanding the open-minded detachment of Bergson, he does not free himself from the dominating influence of his peculiar view of the character of reality. It is difficult in reading him to feel that the actual, as he presents it, has meaning apart from knowledge. His view of time. Professor Watts Cunningham on this. Hegel on time. For Professor Cunningham teleology is no inadequate category, and it implies time as a genuine form of reality, although there is a meaning in which time is transcended in a fuller entirety. The "coherence" doctrine, and Professor Bosanquet's exposition of it. His relation in this reference to Mr. Bradley. The world of ends . . . . . pp. 317–332

CHAPTER XV

THE HEGELIAN PRINCIPLE

Schopenhauer and Bergson chose one branch of the path which diverged from where Kant halted. They sought to reach the thing-in-itself through direct awareness. Criticism has, however, tended to insist on this being only a fresh form of knowledge. Hegel denied the reality of the thing-

in-itself, and sought to get rid of the limited interpretation of the nature of knowledge which had forced Kant to postulate that notion. In discussing Hegel's method it is necessary to begin by pointing out what it was not, for most of the current ideas about it are misinterpretations, arising partly from accepting second-hand information from would-be interpreters. If we turn to Hegel himself the first thing we find is that he did not treat things as created by our thinking about them. Nor did he even set up the Prussian Constitution as an ideal, or as more than a fact to be investigated. Other reasons which have led to the current misinterpretation of Hegel are the circumstance that after his death his school split itself into fragments, and also the unattractiveness of his personality. His character. His terminology and his curious pedantry, which is the outcome of his systematic effort after accuracy in expression. The alternative path to that of Schopenhauer and others which he selected was a resolute attempt to discover a wider meaning of knowledge than Kant had attributed to it. He sought to explain the feature of its relativity by observing it in its self-development. Its dynamic activity he called the *Begriff*, and its self-completing system he named the " Idea." The individual was always concrete, and to be actual was for him to be concrete and individual in form. No system of universals, taken *per se*, could for him be real, any more than a merely objective world of particulars could exist dissociated from intelligence. Concrete experience was the true form of the actual, and it was the work of mind in this that had to be studied. The " Phenomenology of Mind " ; its scheme. The antithesis of " Logic " and " Nature " as two counter-abstractions, each of which involves the other and is real only in experience. Here the principle of degrees is everywhere apparent. His historical method and his vast learning. His attempt to exhibit the entire universe in systematic form was too ambitious. It is the spirit rather than the letter of Hegelianism that is still important. His influence in Great Britain and America and India is to-day much more alive than it is in Germany. Exposition of his point of view, Knowledge is our " That " ; we start from it and never get beyond it. Thought and feeling. Identity in difference. Thought is for Hegel more than merely relational. The nature of the self. The ideal of knowledge. The resemblance of his view of the object-world to that of Aristotle. Substance, cause and effect. The categories are abstractions, and they form the subject of his " Logic," which is really a Metaphysic. The various aspects presented by mind. God is immanent, and experience rightly interpreted is for Hegel reality revealing itself. The finite aspects of mind it derives through nature. His method is what is interesting to-day, and it must still be studied. . . . . pp. 333–348

PART IV—THE INDIVIDUAL AND HIS ENVIRONMENT

CHAPTER XVI

THE RELATION OF MAN TO SOCIETY

Knowledge is not merely theory ; it is action in which we are likewise free. We can select among values, which are not dependent on us indi-

vidually. These also belong to the foundational character of mind, and exhibit degrees among themselves. The nature of the universal moment which they disclose. The failure of Hedonism. The Good belongs to the region of the free person. Conscience contrasted with law. Their characters. The contrast of both with *Sittlichkeit* or " good form." This last is the most prominent source of freedom within a civilised community. It depends on general outlook and purpose. There may appear antinomies between morality and law on the one hand, and " good form " on the other. In the larger outlook these are resolved. This outlook discloses man as no static entity but as a dynamic subject. Identity in ends, as in knowledge generally. The choice between ends is influenced by the distinction between values, which may prove to be final. Their quality cannot be determined by reference to any subordinate standards. The average levels of groups of individuals. The value of man as a rational being turns on his capacity to rise above what is external or biological, and to be a citizen in a realm of ends that are unquestionable. The shadow of self. The lesson inculcated by Goethe in the second part of *Faust*. . . . . pp. 351–366

CHAPTER XVII

THE INDIVIDUAL AND THE STATE

The real nature of the General Will. The difficulty in admitting its existence arises from the assumption that the self is atomic. The basis of its reality is correspondence arising from identity in conception and purpose. The General Will is thus no entity independent of the private will, but is the latter at a different level. It is no sum of private wills. The standpoint in social purpose is what is important. The character of sovereignty within the state. The controversy between Monists and Pluralists. The mere question of legality is not decisive here. The Church or the Trade Union may prove too strong to permit freedom to the Government in the exercise of theoretical capacity. The true source of sovereignty is the sanction of general opinion. The illusory character of the decisions at the ballot-boxes. The difficulties experienced in consequence by the Ministers who have to interpret their own mandate. A real majority rule is different from mob rule. The position of the Crown in the British Constitution. Bacon and Paley. The Judges co-operate with Members of Parliament in securing that the exercise of theoretical power is kept within the boundaries of the national mandate. The influence of tradition and the utility of " red tape." The nature of a nation and the true foundation of the sovereignty which lies behind legality. In what sense the state itself is subject to obligations towards other states. The idea of a League of Nations. There are levels in human purpose higher than that at which the interests of the state appear as final ends. The reality that is larger than that of the state. pp. 367–381

PART V—THE HUMAN AND THE DIVINE

CHAPTER XVIII

THE RELATION OF MAN TO GOD

The lesson learned from the study of the relation of Man to the State. The present problem is not different in character. The conception of God as no entity separated from ourselves. He can be no far-away Absolute whose nature is to be a *totum simul*; no substance, nor yet subject differentiated from its object. He must be the entirety, to which the principle of relativity points; mind as foundational and in its completeness. We are more than we take ourselves to be from our particular standpoints. Can we work out such a conception adequately? If we regard God as immanent we can get some way at all events towards doing so. Man's knowledge and God's knowledge. The use in this connection of the principle of degrees. The true character of knowledge. Why the Hegelian attempt at the exhibition of an exhaustive system was too ambitious. Goethe's testimony to the power of Art in this connection. The language of Jesus. The use of religion. The light thrown on the nature of the self. Time. Not *a* mind but mind. Analogues. The necessity for knowledge in addition to emotion. "Man never knows how anthropomorphic he is." Our metaphors. Thought is more than merely relational. In the effort after truth we experience its real nature.
pp. 385–404

CHAPTER XIX

ETERNAL LIFE

The significance of the ideal of self-completion implied in our knowledge of God as immanent in us. Even if not accomplished in our particular experience this ideal is a shaping end. It stands for the entirety within which must fall every standpoint from which mind directs itself. Analogies and illustrations. The relationships between human beings are those of spirit to spirit. How this bears on the fact of death. What is really desired in the form of life beyond the grave. Spiritualism falls short of it. The deeper sense in which death loses its reality. The value of images and metaphors in this connection. Art and religion; their relation to philosophy. The application of the principle of relativity. The undertaker and the executor. The true significance of the idea of life as beyond the all-severing wave of time, and of the symbols in which this is expressed. . . . . pp. 405–420

CHAPTER XX

CONCLUDING REFLECTIONS

Summing up of the result of the inquiry. The bearing of that result on practical life. The necessity of educating the mind of a nation, and

the variety essential in such education. The leadership required for the guidance of the teachers and for the harmony of their work. Democracy. The seriousness of purpose really apparent since the war. The advantages of the reflective habit. Burke on human nature. The progress in national standards. The mind of the State no more stands still than does the mind of the individual. Its outlook is governed by relativity. The principle of relativity teaches us that there are different orders in which both our knowledge and the reality it seeks have differing forms, and that we must be critical of ourselves when we attempt to bring categories to bear. This is a lesson of high importance for practice. Its value in enlarging our outlook on life. . . . . pp. 421–431

INDEX . . . . . pp. 432–434

PART I

THE PROBLEM OF RELATIVITY

CHAPTER I

INTRODUCTORY

Preliminary. The practical problem. Its scope. The ambiguity in the Meaning of Truth.

ONE of the results following on the Great War has been an increased disposition to scrutinise opinion about religion. What is sometimes called "authority" does not count for what it did. Questions are being raised with a freedom that is fresh about the formulas which express the various kinds of faith. Men and women appear to be looking to-day to the spirit more than to the letter. Precision in theological statement is no longer held to be of high importance, and abstract principles are not being given a great place in the creeds. Even as to the prospect of a life beyond the grave, the people do not concern themselves in the old way. The pictorial representations of such a life are passing largely into the hands of others than ministers of religion; for example, of the spiritualists. The learned classes, including those among the clergy themselves who are learned, are becoming more absorbed in the idea of an eternal life that can be lived here and now, and is beyond the reach of the all-severing wave of time. If for them the grave continues to have no victory, it is from a new standpoint that death has lost its sting. What seems to move people is quality rather than quantity. If the once famous question, "Are we still Christians?" put by David Strauss nearly fifty years ago in *The Old Faith and the New*, were again raised in these times, it seems unlikely that the question would cause great commotion in the mind of the man in the street.

In public affairs, too, marked changes in attitude are in operation. Not only here but on the Continent various forms of political idealism are exercising far-reaching

influence. About such idealism there is much indefiniteness of thought. Many of those who range themselves on its side do so, not from enthusiasm about a programme, but from the desire of an inspiration which they have ceased to find in the politics of the generation that is passing away. What the basis of their new political faith is to be they can tell but vaguely. This age is one indeed of democracy, but not of democracy concentrated on any plan of reform that is universally or even generally accepted.

Nor is it only in the spheres of religion and of public life that a growing change in public opinion is becoming manifest. In literature and in art new tendencies are obvious. The days in which stress was laid on a high level in reflection appear for the time at least to be over. The names of the great reflective poets are associated with a period the work of which is ceasing to satisfy current taste. Expression as an end in itself, rather than as suggestive of insight, seems now to be what counts for most. The average of quality in expression is high, but the restriction of its significance has for a consequence that peaks and pinnacles are no longer conspicuous. The poets are not our leaders to-day in the fashion in which they used to be.

These and other features of the period in which we live are illustrative of changes in disposition that appear to be coming over the men and women of our time. Not only are settled convictions less apparent, but the motive-power which generally attends such convictions is no longer displayed in the old fashion. The loss is a considerable one. But there is neither profit to be found in lamentation nor is there a royal road to a remedy. The gap in the foundations of the old beliefs has been largely the result of reflection, and it is not by the stimulation of emotion, but only in further reflection, that there can be hope of filling it up. No intensity of merely personal conviction can be put for this purpose in the place of conclusions based on reasoned knowledge. For subjective certainty will always in the future be what it has been in the past, individual and only imperfectly communicable.

Now it must not be hastily assumed that the attitude of the day to such subjects as religion, politics, and

literature is one that, from the highest outlook, we ought to regret. If that attitude has brought loss in some things, it is bringing gain in others. Much wheat is being separated from the chaff which our predecessors accepted in vast quantities with their wheat. Great progress is taking place in science. The average is high in literature. If there is absence of conspicuously outstanding prophets, the taught are not separated from their teachers by the wide intervals of the days that once were. The best students know so much that it is no longer possible that any professor should impose on them by the mere authority of his position. His authority they will recognise, but, where they do so, on other grounds. The general standards of intelligence are rapidly rising. And if we look in a different direction, towards the capacities of nations as distinguished from individuals, no war was ever fought with such concentration of national effort as the history of the recent war records. The daring displayed and the knowledge applied, not least in the ranks of the people themselves, were probably much greater than at any former time. The general level of intelligence proved to be such that there was little ground for gloom about it. Perhaps the most impressive feature was that increased knowledge and civilisation appeared to have brought in their train no such paralysing influences as the critics used to forecast. It was the most highly educated and civilised peoples that fought best. The formidable terrors of increased science were compensated for by increased courage, and most of all among those who knew best what science could threaten.

Still, even when good quality in the average level has been recognised, there remains in the onlooker a sense of something wanting. Without a permeating faith of some kind, a faith that can compel in ordinary times as well as in those of emergency, a people can hardly remain great. The faith may have to assume different forms in different countries. It may take the form of a definite religious conviction, and this has naturally been the case in the past with nations that tended to believe fervently in their mission to convert the world to truth. As time goes on and dogmas die, this form of popular belief displays itself less frequently. A more common form, especially in modern times, has been the faith of a nation

in the overwhelming justice of its claim to individual greatness. We saw such a faith emerge long ago in ancient Rome. We have seen it later on in the France of Louis XIV and Napoleon Bonaparte. We have witnessed it still more recently in modern Germany. Something of the sort, perhaps a good deal more than is desirable, we are aware of among ourselves. In the case of each nation there has been a general outlook, varying in form and mode of influence. For each people there has been a national philosophy which has been tacitly embodied in its tendencies. The view of life acted on in each particular country is different from that of its neighbours. The difference becomes apparent, not only in the national literature, but in the utterances of statesmen. The tone has to accord with the mood of those addressed. At times the mood and the tone become modified. They may rapidly be changed by the results of some great convulsion. A war of sufficient magnitude will apparently transform both, and so may some far-reaching political convulsion, such as in British history was the expulsion of the Stuarts and the definite establishment of a new relation between sovereign and subject under the Revolution Settlement.

But in the main the state of knowledge, using the word to cover knowledge in the widest sense, seems to be in the long run the governing factor. Practice always, in some respect at least, reflects principle, and is influenced by accepted objectives where they exist. For the development of the soul of a people, it is therefore necessary to go beyond the transient work which is all that the mere man of affairs can accomplish. There must always remain much that he cannot give, and for the deeper and more abiding inspiration we have to look to others than our rulers. The greatest reformers, those whose influence has been the most far-reaching and abiding, have been the reformers of the soul rather than of the body. That is why it is so important that our ministers of religion, our men of letters, our scholars, our artists, our men of science, and our thinkers generally, should remember that they are under a responsibility to society at large. Where they have failed to realise this, the reason for their failure seems to have been something that was wrong with themselves.

To-day some of these spiritual reformers appear to be succeeding in their task, and others to be failing in it. One reason for this is the difficulty they experience in mutual co-operation. This difficulty is at least partly due to the current state of knowledge. Those who possess special knowledge live in different camps. For instance, to talk to-day of harmony between religion and science is to use words that have little meaning. If the clergy and the scientific laity are disposed to fight less than they once did, it is because they think about each other less than in the days when rigid orthodoxy was held in higher esteem.

Now some progress in the work of co-operation for a great common end would naturally result if it were practicable to render the various forms of knowledge capable of being brought into organic relation with each other. The leaders in each branch would be in such an event more effective in so far as they were clearer as to what they could tell us about the boundaries and understandings between themselves and those engaged in other kinds of teaching. If progress is to be practicable in the development of a unifying tendency throughout knowledge as a whole, it must accordingly rest on the survey of the general field of knowledge in the light of principles that are fit to be accepted. Do such principles exist? This is the question which I shall venture to consider in the course of the pages that follow.

I will offer no further apology for presuming to undertake a difficult task. My reason for entering on it is not any idea that I can do so better or even as well as others, but the sense that the task is an essential one. There is little chance of progress unless it is preceded by a systematic attempt to extract from below accumulated matter what there is reason to regard as valuable truth lying buried there. What has to be brought to the surface seems to deserve the name of truth. For scrutiny appears to disclose that the evolution of thought, ancient as well as modern, has really resulted in more harmony of result than is popularly supposed. It is the relativity of the different standpoints of the historians that has been the main factor in obscuring this harmony. We may come to think that the great systems which have been borne down to us by the current of reflection, in our own

and in past generations, have brought with them more of an enduring basis on which to build up a general outlook than we had imagined. When read in the light of certain things which we have learned to-day, the great systems of reflective thought suggest convergence on principles reached in common, principles which harmonise in their main results, however different in expression they appear. No doubt there have been intense controversies, controversies in which direct denial of the truth of previous ideas has been placed in the forefront. But in the end it has seemed as though, even in these cases, the negative had in the main become incorporated with that against which it was directed, and that a freshly stated and more comprehensive result had been the outcome.

We are too prone to read the history of philosophical knowledge as though it consisted of a record of mere corrections of error and supersessions of defective opinion. In reality it is the history of advance in ideas which have been revolutionary mainly in their expression. Between the teaching of the great schools of Grecian thinkers, those schools which were led by such men as Plato, Aristotle, and Plotinus, and the teaching of the great idealists of the modern world, there is no insuperable gulf. If we strip the forms of such teaching of the mere setting that has been due to the times, the agreement is more marked than is the difference. Applying to philosophy the historical method, we can trace the divergences that are distinctive of the modern outlook largely to the measurable influences of intervening factors. There is, for example, the modern tendency of human intelligence to concentrate itself on exact science, a concentration which is far from showing signs of diminution. The progress of mathematics and of physical and biological conceptions has resulted in much influence on formal methods, including even those of metaphysicians. Then there has been the moulding power of Christianity and, hardly less, of the Renaissance, and finally there has been the changing but permeating literary atmosphere in which expression has had to take place.

In reading the history of philosophy we have accordingly to read it as we have learned to study the history of religion, including the Bible itself, as Matthew Arnold long ago told us to read it. The story cannot be taken

apart from its context in the surroundings amid which from time to time it has been written. But there is a continuity in that story which reflection brings to light. To grasp that continuity requires concentration and patience. But it seems to disclose itself as unbroken when these are brought to bear on the survey of the story as a whole. Without any attempt to write a history of philosophy, it is my object to do what I can to contribute something to the disentangling process. For there is much that has been from time to time overlooked, and a good deal that seems as though it was being overlooked even to-day.

The successive forms of intellectual and spiritual activity in philosophical thought do not, when regarded from this outlook, appear to have really brought about as great a change in the substance remoulded in them as people think. They have had much to do with the correction of the abstractness and also of the looseness of many of the old modes of expressing truth. They have given rise to new expressions about the character of both knowledge and reality, and have resulted in subordinate schools as transitory as they have been subordinate. But, transient as these have been, they have often proved in their own periods of great value. We owe, for instance, much to what is called Mentalism or Subjective Idealism. It may to-day be rejected as a superseded and inadequate theory about reality. But it has served its purpose by dragging to light a great deal that before its time had not been adequately thought out. If of little value for construction, it has had much for criticism. It has shown itself to be a valuable form of the negative, and, like other forms of the negative, it has been incorporated and absorbed, without having permanently arrested the stream of tendency. There is no modern thinker who does not owe something to such subjective idealists as Berkeley and Hume. There are but few who remain of their way of thinking.

Similarly, the attempt to throw philosophy into the form that the science of the period called for has had much influence in preparing for reflection on how to penetrate deeper than even modern science can. The doctrine of evolution and the wider doctrine of development; the modern theory of the relativity of relations in space and

time; the introduction into biology of the notion of end as preferable for guiding observation to that of cause; these, and countless other changes which have shown themselves in new kinds of scientific conception, have necessitated fresh fashions of approach and of statement in philosophy itself. But, again, these new ideas may well turn out to have in the end only the sort of value which fashions which were fresh a hundred or two hundred years ago possessed. They have been necessary for the purpose of bringing to the light narrow views held about the material with which we have been dealing, rather than for that of contributing to any result conclusive in itself as to the knowledge of that in which reality consists. The more we study the history of thought, the more does it become apparent that the advantage of modern thinkers over inquirers such as Aristotle lies chiefly in the external materials with which they have worked. The root problem has been the same, and the advance towards the later solutions has been greater in superficial aspect than in substance.

Still, this does not really imply that there has been no progress in the search after truth. Were it said without careful qualification about the progress of discovery in science it would indeed give cause for heart-searching. That is because science recognises as required by its special standards of truth the definite results obtained from the balance and the measuring rod. Advance tested only by these standards must be mainly advance in quantitative result, rather than in interpretation in its fullest form. When we apply another kind of test in the search after truth, it does not alarm us if we are told that humanity has not got to a higher level in literature and art than it did in the days of ancient Greece. That is because we are using a different standard, and recognise that here we are concerned, not with measurement in time and space, but with value in quality. Now in qualitative value there is of course advance, but it is advance of a kind different from what can be expressed in figures or in quantitative or serial symbols.

Poetry has been described as being the most perfect speech of man, that in which he comes nearest to being able to utter truth. But this description depends for its sufficiency upon its being clearly understood what is meant

by perfection. To the mathematician there is an advance towards perfection in speech when the current ideas about infinitely small quantities, inherited from Newton and Leibnitz, have been thrown overboard, and the limits of functions have been expressed as depending simply on order in series. It is for the mathematician a real step forward when he gets rid of the notion of counting as an adequate basis for number, and can explain it as the designation of classes of similar collections, with which he can operate in his science, although they may include, not only what can be counted, but the transfinite numbers which by their very nature cannot be counted in the way that obtains in arithmetic.

All this may be truth of a very high nature, but it is not the truth of poetry. Value for mathematics depends on standards that are different from those applied in the domain of art. Truth for the mathematician is concerned with the structure of conceptions belonging to order in externality in its widest sense, in which greater and less mean something that, although not necessarily dependent on arithmetical counting, still does depend on order in quantity based on a not wholly dissimilar principle. But truth in poetry depends on a value in quality belonging to a different order in reflection. Now value, however subjective it may seem to be to the mind that is not sufficiently developed to judge it, is yet estimated by standards which are final, in the sense that our minds are compelled in the end to accept the standards, just as in the case of those employed in our judgments of quantity. That this is so, and that judgments of qualitative value have the significance of fundamental truth, the history of literature and art is the witness. It is without hesitation that we have for all time placed Wordsworth higher than Eliza Cook, and Homer, Dante, Shakespeare, and Goethe above the minor poets of our own and other countries. So it is in pictorial art and in religion also. We know broad differences in value there as certainly as we know the differences between light and darkness.

The predominance of the value that is qualitative thus distinguishes certain kinds of truth from what falls short of being the full truth. The standards in the former are really final and foundational, as much as in the instances of truth of a scientific order, notwithstanding that the

tests by which they are applied belong to a mode of reflection different from that to which what are popularly called scientific standards belong. The orders in both cases include conceptions, but these are neither of the same kind nor applied in the same way. We do not arrange serially the objects to which the standards of ethical or artistic excellence apply. We speak of both Sophocles and Shakespeare as dramatic poets of the highest genius. And, while we recognise the great differences which characterise their poetry, we do not try to inquire arithmetically which poetry was the best. On the contrary, we say that each belonged to the finest level of its own kind, one which in its own fashion was the highest imaginable by us, estimated by tests which we cannot but accept and beyond which imagination does not point.

It is thus that it becomes clear that truth has a meaning which is in important respects relative to the subject-matter. In the history of literature we are prepared, as we are not in the history of science, to find truth attained not less completely in periods that are gone than in the period of to-day. The form, the mode of expression, may in literature belong to what is past. But the substance, the quality, belongs to what is independent of time and space and change; it is of an order that actually lies outside time, for sequence in time and continuance do not essentially concern it. It is not with order in quantity that we are concerned here.

When we speak of what is true in literature and music and art we mean something different from what we have in our minds when we are discussing scientific theory. Yet even in science what is recognised as true may imply much that belongs to varieties in level that are not concerned with mere quantity. In biology and in medicine we observe what has aspects other than those of the mechanical and belongs to a different order. The doctrines of evolution, of heredity, and of growth appear to necessitate the recognition of ends in operation, as distinguished from external causes; ends, the operation of which is of such a character that difficulties about action at a distance disappear, and that the ends themselves take external shape in the phenomenon of a whole which has no existence outside its members and the material in

which it expresses and conserves itself, maintaining unbroken the identity of the organism through its course from its conception to its death, notwithstanding metabolism and constant change in material. In medicine it is far from clear that the nature of the stimulus imparted by a drug to the performance of function by the organism can be expressed in terms of physics or of chemistry. The character of the stimulus belongs to the domain of life, and distinctive differences in mode of operation are obvious. Even in sciences that are concerned with externality as such, like mathematics and physics themselves, adequacy implies more than mere correctness in ordinary measurement. Of this the teaching of Einstein is the demonstration. Still, in science generally measurement is in itself of the highest importance. Even in physiology the conceptions and methods of physics and chemistry are not only capable of application to the phenomena of the living being, to the measurement of the taking in and giving out, for example, of its energy, but are essential for exact knowledge about these phenomena. Science is largely concerned with the mechanical standpoint from which truth is the measurable agreement of the conception framed with its object as something external to and independent of it. The adjustment of the terms in which its conceptions are to be expressed must accordingly depend largely on the balance and the measuring rod.

It is in the light of experience such as I have referred to, that we become aware that when we talk of truth we sometimes have in our heads an agreement, depending on comparison of relations in time and space of images with their objects, or that we may mean, as in literature, music, and art generally, what is of a different kind, depending on adequacy of that which is expressed to an ideal of value that imposes its authority, as it were, from within the mind itself. The question that now arises is what we mean by truth in philosophy. There is no doubt that philosophy is dependent on science in a way that art, for example, is not. For the excellence of a picture it is wholly immaterial whether its object has ever been there, or whether the details ever appeared in time and space in the proportions in which the artist has made them stand. The cottage and the girl who appears at its door

may never have existed. Or if they did, and if what is sought to be conveyed is artistic value, and not mere reproduction of details, as in the case of a photograph, exactitude is of little importance. What matters is the quality of the idea that the picture awakens. That is its value as true for art. But if philosophy, the problem of which is always the final character of reality, is to give an enlightening account of that reality, it must be under no mistakes as to the scientific truth about the facts which it has to interpret. Accuracy is here indispensable, for otherwise the supposed facts will not in the end stand for facts, and confidence will not be commanded. That is why, despite the great contribution which the Greeks made to the interpretation of the universe as they conceived it, faith in that interpretation has been lessened by the great growth in scientific knowledge which has taken place since the days in which Bacon wrote. New information about the facts has entailed modifications in much of the interpretation that the Greeks put on what had to be interpreted.

Nevertheless the Greeks did many things that have advanced our understanding of the actual, a great deal more than they usually get credit for. The general character of reality received a treatment at their hands which dispelled a good many partial notions. This is true in particular, as we shall see later on, of what they taught about the general relation of knowledge to the actual. For them knowledge meant knowledge without restriction of character, direct and indirect, æsthetic as well as scientific. For they had realised that the complete truth is the whole, and that the different kinds of reflection fall, along with their objects, within an entirety.

The outcome seems, then, to be that what we really mean by truth may sometimes have to be construed as extending to more than the mere agreement of our ideas with what is conceived as existing apart from and as external to them. The test of truth may have to be adequacy in a fuller form, a form which is concerned, not only with the result of measurement with the balance or the rule, but with value that cannot be so measured and that depends on other orders in thinking. What is truth from one standpoint may not of necessity stand for truth

from another. Relativity, depending on the standard used, may intrude itself in varying forms.

To be true a conception must be adequate. Its adequacy for the special purpose in view may consist in its agreement with the results ascertained by measurement. Or it may consist in its value as lifting us above what seems to be of a low order, relatively to higher quality recognised by criteria that are foundational. This is the truth which we recognise in a work of art when it gives us the sense that beyond what it expresses there is nothing higher of which we can form any idea. It may be that it is only in art in some form, awakening in us the feeling that we are lifted above relativity and are in the presence of what of its own kind is perfect and complete, that we can have this sense without qualification. But something like it arises in our souls in religious consciousness also, depending as it does on a feeling of finiteness accepted and as accepted transcended. This is an example of adequacy in value of another form. In neither case is feeling wholly divorced from reflection. And if a level were attainable at which the apparent separation between thought and feeling were superseded, there would be no sharp distinction between the various forms of adequacy, scientific and æsthetic. It may therefore be stated generally that an idea is true when it is adequate, and only completely adequate when it is, from every point of view, true. Each form of test that is applicable must be satisfied in the conception of perfect adequacy; for otherwise we can have only truth that is relative to particular standpoints.

It seemed desirable to get this almost but not quite obvious proposition clear before proceeding to search for a principle by the light of which certain important forms, in which it is currently claimed that truth is correctly presented, may be called into the witness-box for examination.

CHAPTER II

THE DOMAIN OF SCIENCE

In the conclusion of the last chapter it was suggested that the word " truth " is not free from ambiguities. It has, latent in it, implications dependent on our standpoints. The truthful description of nature given by the physicist may be highly divergent from that given by the poet. For they have approached nature from different points of view, and have brought to bear conceptions of reality that belong to different orders in thought. The poet has no use for the differential equation of the physicist, the standards of which are not concerned with emotion. To the physicist, on the other hand, the imagery in which the poet idealises the sunset may well seem to be, from a strictly scientific point of view, greatly misleading.

Yet for criticism that is to be adequate both standpoints are required. For truth is relative. The two outlooks have their justification in the different orders in reflection to which they belong. Moreover, there is some analogy between the method of science and that of the poet and the artist. In mathematics, for example, science constructs what are pictorial symbols. These may be geometrical figures or they may be arithmetical numbers, or they may be algebraical forms that symbolise general conceptions applicable to classes of numbers, such as the symbols that figure in an equation. But pictorial they are. They are objects to be looked at, and to be experimented with by moving them about on paper. When the mathematician transforms the equation $x = y$ into $x - y = 0$, he can interpret what he has done mediately, by reflecting about it. But reflect extensively he need not, for he can see at a glance that the result is correct. He has been experimenting with objects the relative position of which on the paper he has changed, and his eyes tell him that the re-arrangement was justified. No

doubt concepts are implied, and the process can be expressed for reflection in a logical form. But he has not needed to reflect fully. What he has done, by a resort to symbols apparently merely external, has been to effect at the least a great economy in thinking, and he has come to his new result apparently through immediate perception. In this fashion he cannot only get at truth by short cuts, but he can make discoveries which might have been very difficult, if not impracticable, for abstract logic. It is in ways not very different that the poet and the artist construct images which seem to require no speech to explain them, and can be used in reflection as we use counters or banknotes. They stand for meaning which we do not need to express, although it is there implicitly.

Let us pursue this line of reflection a little further, by extending its application to the domain of physical science. We will begin by asking what is the view of nature which the physicist fashions for himself.

There are not many features of the intellectual life of the twentieth century more interesting than a new disposition that is becoming very prominent. It is the disposition to search for and drag to light unconsciously made assumptions. How much may not the individual mind of the observer have deflected the real results which his observation has yielded ? What are the facts as truly apprehended in their integrity ?

The necessity of putting such questions is becoming more and more evident. In the last century many prominent Victorian men of science had a theory, which Professor Whitehead, who has written two books to which I shall refer a little later on, has called the " bifurcation " theory. For these Victorians the object-world of what we call " nature " was distinguishable into two separate phases. One was the genuine objective reality. This consisted in a self-subsisting and uniform system of space and time, with its points and instants independent of the events that occurred at them. Within this framework, and conforming to its structure, there was a mechanistic assemblage of atoms and energy, consisting of and operating within an all-pervading material substance which they called the æther, and which disclosed the atoms and the energy as varying attributes of matter. The other

phase of the world of nature was wholly diverse. It was not real in the sense the first was real, as something existing quite independently of any relation to the mind, but subjective, in the sense that it arose only in perception and by individual interpretation of the results of causes belonging to the objective domain of the first phase, causes which, as they maintained, could be resorted to inferentially as the explanation of the mental results. These latter were, in effect, secondary as distinguished from primary qualities. Thus the colour violet was a subjective phenomenon of a secondary kind, but it could be connected, by the intelligence of a person sufficiently educated, with primary phenomena in the form of causes which could be observed in nature as motion in certain wave-lengths in the æther. The explanation was not an easy one to follow, for it could not show any identity between cause and effect such as science searches for. But it was generally accepted.

Not all of these Victorians were untroubled about this bifurcation doctrine, for the philosophical critics of the time, some of whom were well equipped by studies in the controversies of past periods, accused them of having lapsed into obsolete metaphysics without knowing it, and certain of the physicists themselves were disposed to think that no good answer to such criticism had been given by science. But so long as the bifurcation doctrine prevailed, and no common root for the two phases in nature could be stated intelligibly, the tendency to divide reality into two independent parts remained unchecked.

The view commonly assumed as true by the majority of the Victorian men of science, even when they did not state it explicitly, met with a good deal of remonstrance from the laity. A story is recorded of an occupant of the Woolsack, a man with a mind that was highly distinguished for its penetrating capacity in other fields of knowledge, but was not versed in either philosophy or science. He happened to be returning from a meeting of a well-known society which then existed. The society was one formed for the discussion of metaphysical subjects. There had been a dinner of its members out of London, and some of the party, including the Lord Chancellor and several eminent men of science, were returning to London by train. The talk in the railway carriage turned on the

distinction between wave-lengths in the æther as external causes and colours as purely subjective effects, and on the somewhat meagre, if still highly important, phases in nature which were all that the science of the day would recognise as real independently of the mind of the observer. The Lord Chancellor is said to have listened attentively for some time, and then to have put a searching question, "But do you mean to tell me that the blue of that cushion is only in my eye?"

Whatever science may have thought forty years ago, to-day the distinguished Judge, had he been alive, would have found the scientific world largely on his side. For the blue is beginning to be generally looked upon as no more merely in a man's head than is the electron or the point-event of the outside world. People do not now try to bifurcate nature in the old fashion. The outside world, as I look on it while writing at this window, lies before me with riches of which every phase truly belongs to it as genuinely as does any other. It exhibits mechanistic features, but it also has biological aspects not less important. It discloses the shaping influences of ends, and it possesses colour and beauty and value. From different standpoints all these come into and belong to the entirety of the world as it is stretched out before me. Take away any of them and that world will not only mean but be something different. I who am observing it am myself one among the numerous objects which I identify as belonging to it. There is a single whole within which fall matter and mind alike. We may explain it as we please, we may describe in *what* it consists, but *that* it is for us as it seems is a final fact. Such is at least the view which is beginning to be insisted on in the twentieth century, even in scientific circles. The Victorian school of which I have been speaking thought of the mind as one thing and of what it observed as another thing. They applied the category of entity or substance to both without pausing to take breath. That was in reality why the Lord Chancellor grew suspicious of them. To-day the method of the Victorian physicists and biologists is being rapidly relegated to the lumber-room. It is science itself, much more than philosophy, that is sending it there. Modern men of science do not now think of the world as consisting of an objective portion, including certain

separable and self-subsistent entities, or follow blindly the principle which John Locke long ago made popular because it seemed so simple. The battery of criticism brought to bear on Victorian scientific speculation by mathematicians, physicists, and biologists, not less than by men with names well-known in philosophy, and by others, believers in the reality of universals, some of whom were the spiritual fathers of the New Realists of to-day, has done its work. The " bifurcation " doctrine is in ruins. Science does not now concern itself with distinction of entities nearly so much as with distinction of standpoints, whether these are the standpoints of observers in a space which is beginning to be now looked on as only relatively independent of the observer, or the standpoints to which observation generally is found to be confined in its results by the limited character of the conceptions applied. Separation in standpoint, or in order and level in knowledge, is thus tending to supersede the notion of separation in existence.

The form which this change assumes is the importance now attached to interpretation or meaning in the constitution of experience. Nature lies before us with the significance we ascribe to it indissolubly incorporated with all the rest of its character. The tests and standards of truth are as inexorably applied as ever, but they are differently expressed. My individual mind does not create nature. Rather does it belong to nature as a part of it. But, as we shall see later, its significance as so belonging requires careful definition. From one standpoint, interpreted in the conceptions appropriate to that standpoint, it may well appear to be just a thing or an event within nature. But this, as we shall also see later on, is no exhaustive or adequate description of the full character of what we really imply when we speak of our minds. It is not simply for *my* mind that nature is what it is. Doubtless there is always a certain relativity to the individual. To my dog, whose mental equipment is other than mine, the world as it exists is a more limited one than it is for me. Beauty, for example, apparently does not belong to it for him. Now this is the case, if to a less extent, even as between men. The artist and the man of science are aware of what others are not aware of. Still, they, like other men and the dog, seem to start from a

common "that," the "what" of which it is the varying content that gives meaning, and reality not less, to their experiences. But this content is inseparable from interpretation. Even printed words are only insignificant splashes of ink excepting so far as I can read them. The old idea was that the meaning must be something quite separate from that of which it was the meaning. But closer study has raised questions about this.

Locke had treated meaning as being separable from experience when he distinguished primary qualities, such as those of extension in space, from secondary qualities, such as colour, and had insisted on the former as belonging to the thing perceived, and the latter as belonging only to another thing, the mind that perceived it. Berkeley carried this further when he refused to distinguish the allocation of the two kinds of quality. For he declared that all our experience told us was that our minds, as spiritual substances of some sort, were aware of their own sensations and ideas, and that these were to be looked on as self-subsistent signs through which a deity informed us of the nature of a world which arose in virtue of his having so ordered these ideas. The actual experience was thus isolated from its meaning. Because the ideas thus regarded in themselves could tell us nothing intelligible, either of the nature of the spiritual substances named minds or of the deity who acted on them, the Berkeleian theory was easily torn to pieces in the hands of Hume. If sensations and ideas were self-contained entities, and their relations were merely external and accidental to their self-contained character, then the relations could have no necessary validity, and the unity and apparently compelling character of knowledge were illusions, the results of habit and the association of ideas, and were wholly unreliable. The precipice of scepticism thus began to loom very close at hand, and the only question of difficulty that remained was how, if our knowledge could in reality amount to no more than this, such a pretence at knowledge could ever have conducted us to any consciousness of the reality of the precipice.

It was of the question so raised that Kant laid hold. I refer to him, not for the purpose of discussing his system at this point, but only to draw attention to what I believe to be the case, that he is the father of what is now

beginning to be recognised by the scientific thought of our time as the view implied by its methods.

Kant was unable to find a solution of the problem of the real in the notion of experience as a collection in time and space of isolated entities, existing independently of their relations, and apart from a setting in some framework of meaning which would make these relations essential to the existence of the entities. For him the work of science lay in interpretation, and interpretation could signify no more than the finding of the true meaning. In what, then, did the meaning of our actual experience consist? Although Kant's solution of this problem was only a partial one, it is not the less highly instructive to-day. He threw overboard the easy-going assumption that it will do to look on the mind as a self-contained thing confronted in experience by another self-contained thing. Going behind such thinghood he sought for an explanation of the relationship in the inclusion of both under a totally different conception, indicative of a mode of actuality that was quite different. When we perceive, Kant held that we are more than we appear to ourselves to be. What is really constructive of our object-world is intelligence, and this is more than merely individual. Intelligence which introduces significance into its object is the very condition which is implied for the possibility of experience, and it must therefore be the identical knowledge of all individuals in so far as they have experience. In two pure forms of perception, or of what he called intuition, time and space, its activity arranges in relations, or schematises, the raw material of sensation, which comes to it from things in themselves, into an orderly world, thus arising independently of our individual participation. Within experience so constituted the particular mind so encounters an object that is independent of itself as a merely particular personality. The object is in this fashion independent of the mind, inasmuch as it falls within a larger process than that of merely individual knowledge. The individual mind itself arises as the outcome of the process, while at the same time, although itself an object in experience, it is more than this because it expresses the process in which it appears to itself as a result.

This was Kant's theory of nature. It showed a great

advance in capacity for explaining the facts of objectivity over that of Berkeley. For, in the first place, inasmuch as all experience owed its structure to mind as its foundation, the laws of that structure, as being put into it by mind itself, must be universally and of necessity true. It lay in this fashion in the very nature of experience that two and two should make four; that the square of the hypotenuse of a right-angled triangle should be equal to the squares of the other sides; and that every event should have a cause. These things were deducible from the underlying conditions of every possible experience, and within such experience they were of necessity everywhere valid. On the other hand they were true, not of what did not come into our experience and therefore was not thus constructed, but only of experience and within its limits. At the character of God, and of objects conceived as lying beyond experience, we could not get by perception. These remained ideals due to reflection, and their reality was not to be apprehended in what we could experience. This was true also of ends and artistic ideals. For the forms in which, for Kant, the activity of mind operated in the constitution of its objective world, were of a mechanistic character, and did not include such non-mechanistic forms of knowledge.

Kant's method laid new foundations for the principle of objectivity in nature. For he had rescued this from the particularism of Berkeley and the latter's divorce of what alone the senses make us aware of from its far-reaching significance as experienced. For Kant the mind found as there in nature what was of its own character and content, in objective form. In a measure, to be intelligible was for Kant to be real, and to be real was to be intelligible. For meaning was everywhere incorporated in reality. But people presently began to ask why Kant had limited his categories to those of a mechanical order, and why time and space were put on a different footing from the other factors involved in knowledge, by being made mere forms of intuition instead of being given a conceptual character, like number and causality. It was presently declared that Kant had committed a cardinal error in really trying to go behind the fact of knowledge and to break it up. It was asked how it could be, if knowledge was the only mode of approach to facts, and

was itself presupposed in all attempts at investigation even of itself, that its validity could have been properly called in question in this Critical Philosophy. To try to question the instrument through which alone questions can be realised and answered is to commit the fallacy of the sceptics, who, if consistent, ought *in limine* to deny the possibility of reliable scepticism. We cannot learn to swim excepting by entering the water, and trusting ourselves to it. We must trust ourselves to knowledge simply because there is no way of doing anything else. The only mode of studying knowledge is, therefore, the observation of it in its own self-development. It cannot be broken up into fragments, for there is nothing beyond it of which such fragments can consist. Therefore Kant was not justified in trying to lay it out on the dissecting table for dismemberment. The distinctions between thought, time and space, and sensation, cannot be fundamental. They must fall within one entirety, and it is as belonging to that entirety as its phases, and not as entities apart, that they must be studied.

Such a view of the real must take account of the knower as well as the known, if it is to be a complete philosophy. But when we distinguish, as we must do for the limited purposes of daily life, nature as known, from the percipient for which it is there, we form a conception of the world confronting us as self-contained and as if "closed to mind." Such a conception is legitimate only if we remember that it depends on a standpoint which will prove not to be a final one. There may have to be a yet fuller conception, belonging to a different standpoint in knowledge, a conception within which both mind and nature can be shown to fall. But it is legitimate, if we bear in mind that the actual standpoint is just that of an observer face to face with a world which he provisionally accepts as there independently of his observation, to confine ourselves to what we take to be revealed in perception, though relatively only, the presence of nature as an apparently self-contained system. Now in science, strictly so called, we observe and experiment with a view to determining the general notions involved in the descriptions of things so taken.

In nature thus conceived we make no distinction such as that between secondary and primary qualities. We

take it to be an entirety as it stands. Every phase belongs to the entirety and is a factor in it. Interpretation and standpoint are accordingly inseparable from what is interpreted. This is easy to see when we turn to objects in nature, such as a sunset, which owe their important significance as facts to the artistic consciousness of the observer. The sunset in its beauty is not the less real because for the man of science, who from another standpoint, puts a different interpretation on it, its reality means something quite else. So with the picture that hangs on the wall. From one point of view it is merely a disorderly mixture of colours spread over a canvas. From a different point of view it expresses meaning which is not the less real because it requires, to give it existence, mind of a certain order. The printed words which we interpret as expressing a poetic idea are in the same case. The words embody a poem, although to another view they are merely so many smears of printer's ink or even dirt. For a dog they are only something to chew. The world before me would lose half its reality did it not yield meaning for mind at the level that is required to apprehend that meaning as among integral phases of the existence of the world at that level.

When we turn from aspects, such as beauty and ends expressed, to those of mere mechanism, the same truth confronts us. Every man has some science in him through which the world is present in the ordered mechanical aspect it wears. Even the animal that discriminates what is useful to it from what is noxious seems to bring reflection and memory to bear. We human beings think abstractly by the aid, for instance, of geometrical figures or of arithmetical numbers, and, by bringing our so-called immediate world under these conceptions, we extend its significance and the range of our inferences over those of the animal. It is further true that the mathematician, the physicist, the chemist, the biologist, the artist, the clergyman, the metaphysician, all abstract from, or, in other words, ignore, the phases of the real that do not concern their respective purposes, in order to get distinct and extended knowledge about the aspects of things that are important to them, and to find out what their reality signifies. Within each order of approach to significance in what is apprehended fresh truth emerges and reality

is invested with fresh meaning. The truth that emerges is not in each case of the same order. Its standards, as we have already seen, vary with the order and the standpoint to which alone they are appropriate. Of these standpoints there may be more than one employed in the direction of the activity of knowledge. Within each there will be the truth and error that belong to it, and within each the criterion will prove, as the case may be, to be of the strenuous order of science, or of the compelling character of unquestionable value recognised, or of some even different character. It is not independent entities that we discriminate in these different phases of the actual, but aspects arising from the points of view we are at. There may in an actual and individual phase of our experience be many aspects present, and there may be required as many kinds of knowledge as are appropriate to each aspect. In certain of these kinds of knowledge the scientific methods of abstraction will predominate. In others what matters will be the idea of excellence in value. In the latter cases the idea may seem to us to be indistinguishable even in reflection from the object, and the judgment of excellence will be of a character so immediate and simple that it will seem to amount to no more than a feeling æsthetic, ethical, or religious. But it is not really so, for no such feeling is possible unless, by mental quality of a reflective kind such as distinguishes the man from the animal, the mind is rendered capable of the judgment of excellence. Thought and feeling are never separable in what is actual. The one may appear to be suggested more prominently than the other, but both are invariably present. For the distinction between them is itself a creature of reflection. This is shown by what has been said about man : that he alone in the animal kingdom is capable of religion.

The principle is one that distinguishes broadly the views of thinkers like Kant from those of the school of Berkeley and Hume. Nothing is real for us apart from meaning, and the meaning is not separable from the " It " which we perceive. We may of course attribute wrong meanings. The mind of man is free, free to err and free to sin. But there are standards of truth of different forms which develop with the development of knowledge. By the aid of these we free our minds from interpreta-

tions which are aberrations from the normal, merely due to the idiosyncrasies of the individual within each order of truth. They enable us to distinguish what is true for all men from what is the subjective belief of one or a few only. They even enable us to pass beyond a traditional opinion, and to recognise it as subjective and individual in its origin, and as not conforming to the conditions which alone make experience possible. Thus, while knowledge never stands still and is always being developed, it may take time and repeated testing to discriminate the true character of what is believed to be knowledge. This does not imply that truth varies with the individual; it varies, but in accordance with principles of universal application. When we apprehend truly the nature of the object of knowledge we apprehend something that is independent of our private outlook. There is no difficulty in coming to this conclusion; the difficulty is as to what it signifies.

It is, as we have seen, only on the basis of accepting knowledge as an ultimate and final fact, in terms of which all that is apparently subjective, error as well as truth, must be rendered, and within which all that is or can be must somewhere fall, that our object-world is intelligible, Now it is just this consideration that delivers us from the puzzle that arises when we hastily assume knowledge to be merely *our* knowledge as particular beings. We are at once forced to inquire whether knowledge is not more than this. Kant, as we have noticed, denied that knowledge was a mere attribute of the empirical self that belongs to its object-world. He asserted it to be that which lies at the foundation of the self, and of the object equally, as well as of the relation of the two. From some view of knowledge such as this it seems impossible to escape. For it is, on the one hand, the way of deliverance from subjectivity, and, on the other, it accounts for our consciousness of an objectivity that is independent of the particular self that perceives. Kant's view thus gives us the "It" of which we are in search. Reality lies in the foundational character of knowledge, and in the distinctions between perceiver and perceived, knower and known, as being distinctions falling inside the entirety of that foundational character, inasmuch as they are made by and within knowledge itself.

The point is one which will be developed later on. It is a point of no easy character. But then the problem of reality is a very difficult one, perhaps the most difficult of all problems, and it is only when we are driven to face it that we ever do so. Now here we are driven to face the problem, because, unless we can find a solution for it, we can hardly hope to get at a principle such that it can free us from perplexity over a multitude of other problems which press on us ominously. It is suggested that our knowledge, when we perceive an object, is a relation which is somehow established between it and us, just as if we were only living *things* possessing a special and individual attribute of being able to know. But if that suggestion is based on an hypothesis assumed to be true but incapable of being formulated intelligibly, we are driven to inquire whether the hypothesis is tenable. It may be not only an apparently plausible but a useful one, useful for application when we do not need more than the aspect of reality which it yields. But it may not the less be profoundly false, if it claims to be a principle by which we can explain, if we wish to go deeper into the nature of existence.

I cannot at this early stage do more than state the alternative principle. It is no novel one. It belongs to the essence of the metaphysics both of the greatest of the Grecian thinkers and of the most modern idealists. If it is a true one it is only because of a profound misapprehension that we seek to resolve knowledge into a relation between self-subsisting entities, or indeed into anything other than itself in its many forms and aspects. For, should it prove to be the case that behind the fact of knowledge we cannot go, and that all criticism of its truth or untruth falls within itself and must be wholly its own act, then it is obviously absurd to treat it as an activity of a particular being in space and time. It is in a larger view the medium within which all experience lies, and the self is its expression, but never its complete expression. For the self is finite, although, just because of its character as an organ in which knowledge expresses itself, it is at all times more than it takes itself to be.

It is in the dubious fashion I have referred to that the relation of the intelligent human being to the object which he perceives is sometimes regarded as belonging to

the order of thought concerned with externality. That is because both his mind and his object are taken to be things or substances, legitimately from many standpoints, but legitimately only from these standpoints, and in the light of such conceptions as properly belong to them. But if we reconsider the assumption here tacitly made, that we, as individual men with names and positions in space, ought to be taken first in the proper order of reflection about reality, and that the fact that we know may be taken only in the second place, a different conclusion seems to force itself on us. The subject as distinguished in knowledge from the object can hardly be regarded as a self-subsisting substance, but is surely just itself a form that arises within knowledge. The object appears to be similarly just another form, the corresponding and correlative result of the distinction. The activity of knowledge in making the distinction is thus in truth prior to the results distinguished. One of these results is that knowledge assumes for itself the aspect of a subject or self, so distinguished and yet expressive of the activity of knowledge itself. It is related within the final fact of knowledge to an object which belongs to knowledge as much as the self belongs to it, and is its correlative reality within the entirety. Thus an object is not merely naturally but essentially there for the subject, not only in space and time, but in consciousness. Behind the fact of consciousness one cannot go. It is our " that " of which we can only inquire into the " what." The " what " is always self-changing, for knowledge is dynamic and not static. But still in some form it always occupies us. What the form is, in the case of object and subject alike, is a question that turns on standpoints and orders in conception resulting from them, and of these the character of knowledge discloses in its self-development an unlimited variety. The point is therefore that at the foundation of these standpoints, implied in them and capable of expression in all and each of the multiple presentations to which they give rise, is the cardinal and irresoluble reality of knowledge itself, the ultimate medium in terms of which all else must be expressed, whilst it cannot itself be expressed in any terms beyond its own.

It is this view of knowledge, different from that yielded by the artificial and subordinate standpoint from which

the psychologist sometimes has to treat it, that renders not only the relativity of its isolated phases but also the merely relative truth of these phases intelligible. If it is a correct view, then the question of what underlies knowledge and gives rise to it is one which is unintelligible and absurd. Neither what we call minds nor what we call things know. They are themselves objects within the knowledge which has aspects that in order of reality precede and go beyond them. Things are therefore out there just as they appear to be, independently of me the individual knower, although they have had attributed to them aspects in reality of a relative order. Such aspects are the inevitably incomplete expressions of the foundational knowledge within which alone such aspects themselves arise.

If this be true we have accounted for the fact that there is an " It," and are already a long way from Mentalism or Subjective Idealism. The question of the genesis of knowledge as related to any other reality turns out to be irrational. But the " It " has its meaning or interpretation as part of its reality. So, in his way, Kant held, and he would appear to have been right as against Berkeley and Hume, who sought to obliterate what was essential in that meaning.

Before concluding this chapter and approaching its principles at a further stage, it is worth while to restate its conclusion in another form.

The final and foundational fact appears to be the fact that I know. For it is in terms of knowledge that all existence is expressed. Excepting for knowledge nothing has any meaning, and to have no meaning is to be non-existent.

Obvious as this seems it is yet a conclusion which meets at once with an objection. The plain person refuses to accept it on the ground that it is not his thinking about them that calls things into existence. He is clearly right when he says this. But does his objection affect the conclusion against which it is directed ? On one construction it does so. If the last word about knowledge is that its object is to be looked at as a property of a particular mind with a particular place in space and time, the objection seems unanswerable. Dr. Johnson, however, answered this construction long ago when, in comment on Bishop Berkeley,

he thumped his stick upon the ground. The ground was of course just as much an actual fact as was his individual mind.

Nor does the difficulty Dr. Johnson felt seem to be made less by Berkeley's suggestion that there is some other sort of mind than that of the inquirer in the knowledge of which reality can be sought. For it is not easy to see in what relation the inquirer's mind, that of a person with a history and a position in nature, can stand to such another mind if it be something outside his own.

The problem remains unsolved. It is only in terms of knowledge that reality can be expressed, and knowledge can be described in no terms that go beyond its own. Even the distinction between reality and unreality is one within thought itself. The only way out of the puzzle seems therefore to retrace our steps, and to ask whether at some point we have made an assumption that has precipitated us into our difficulty. Now there was an assumption that is obvious. On the older hypothesis we took knowledge to be a property of the particular self that is asking the question about it. No doubt from one point of view, and one that is not only legitimate but necessary, this is so. But is it the only possible point of view? Surely not. For the self is not less than any thing else an object for knowledge. That is to say, it presupposes the ultimate fact of knowledge if it is to have any meaning at all, and in logic, at all events, knowledge comes first. Is it, then, open to us to proceed on the footing that the self is a notion that has arisen within knowledge and is derivative from it? If so, knowledge may turn out to have been the ultimate fact and the foundation of the universe for which we are in search.

There is one possible view which leaves such a conclusion open to us. It is that the common idea of a self with which undoubtedly knowledge is somehow in intimate association as its property, is a conception that is only relatively an adequate one. Of conceptions that are only relatively adequate there are many examples. One of the most familiar is that of a living organism. We can and do in our daily practice treat it as so many pounds weight of carbon and other atoms and molecules, arranged in accordance with the principles of physics and chemistry. So far this is a true view. The law of the conservation of

energy applies to the living organism. But this conception of it is not the whole truth nor adequate truth. For the organism is living, and its character can only be fully expressed in terms of life. So expressed it consists in growth, heredity, and generally in behaviour in the unconscious fulfilment of an end, resembling the pursuit of a purpose realised by the component parts. The substance is always changing, but the end persists until its function in the interest of the species terminates with death. The end is no physical or chemical cause, acting *ab extra*. It is the *quasi*-purposive behaviour of the constituent organs, such as the lungs and the kidneys, which adapt their work in apparent concert for the preservation of a whole that, in so far as it is so preserved, lives and controls the action of its organs in accordance with its requirements.

Thus the physical and chemical standpoint is only relatively true, however useful and necessary for getting clear and extended knowledge belonging to a certain order in reflection. The standpoint of biology, with the conceptions it employs, is no less necessary, and is certainly not less obvious and natural in our daily attitude. The two outlooks do not conflict, because they belong to different orders in thought, employing ideas that are in logic of diverse kinds. Reality presents itself at two different levels.

Now it may be that we shall find that the self analogously presents itself differently at different standpoints belonging to different orders in reflection, and that it has only been relatively that the self has appeared as sort of substance of which knowledge was an instrument, by means of which the mind so conceived got at things thus looked on as existing outside and wholly independently of its knowledge about them. We shall have in this book to examine that question, along with others that arise out of it.

I have now led the reader, as he may think precipitately, into an early discussion of what must be the cardinal question for philosophy. But I have done this in order to make what follows intelligible, and to enable me to pass to the general principle of the relativity of knowledge.

CHAPTER III

RELATIVITY AND WHAT IT MEANS

The principle of relativity, if its beginning is sought for, will be found to date back to the days of ancient Greece. Plato and Aristotle were aware of it and of its far-reaching importance. Later on Plotinus was occupied with it. It recurs in subsequent periods of the history of thought about reality. What seems to be needed in our own day is not merely its statement in a form adapted to our times, but its rescue from obscurity, arising from unconscious assumptions and distorting metaphors. Almost every great philosopher of ancient and modern times has had his attention directed to the principle in some form, but it is to-day that there has come to it for the first time a chance of obtaining from science itself full scope. For it has at last penetrated definitely into the domain of science. Leibnitz and Kant came near to touching on its application in this region, although in their times that application would have been regarded, and not unnaturally, as matter for philosophy by itself. But now science has begun to scrutinise its own foundations, and to apply its own methods in the investigation. It is in this fashion that the researches of Einstein have given a fresh importance to the principle of relativity. The precise standards and the exact reasoning of the most modern mathematicians and physicists are throwing a new light on the significance of the principle. Apart from their work it is impossible to-day to state it adequately or to appreciate its range. Men of science are now advancing with sure steps into a domain which for long they did not think of entering. It is not a domain that can belong to them alone. In this borderland they are bound to meet the

metaphysician. It may turn out that they need him just as he needs them. For the principle itself is one of which they can have no monopoly. It does not apply only in physical science, or only in philosophy in relation to that kind of science. As we shall find, it is one that is required in other departments, belonging not only to science itself, but to art and religion and knowledge generally.

It is therefore necessary, if the principle is to have its scope fully interpreted, to follow out its application in a good many regions. This I have sought to do so far as I have felt able. It is unwillingly that I have even touched on topics with which highly trained specialists alone are competent to deal in detail. I know too well from my own practical experience in hearing legal arguments how quickly the deficiencies of the outsider become obvious to a trained eye. But, then, the principle of the relativity of knowledge does not itself belong to any single domain. Einstein's teaching is only an illustration of its application to a special subject. To interpret the principle itself it is necessary to examine the character of knowledge as a whole, and in doing this it is not practicable to avoid looking at the various regions in which this great principle in knowledge discloses itself.

I have thought it right thus to explain why I have found myself compelled to touch topics which should be dealt with as a rule only by those who are highly trained specialists. I have avoided, as far as was possible, any suggestion that encroaches on their work. Where I may seem to have ventured to speak boldly it has been because the point was one which impressed itself on me as outside the peculiar sphere of any specialist and belonging to the general theory of reality, merely illustrated in a special fashion.

Relativity in its widest sense is an old and familiar idea. It sometimes only means that our view of things in the world varies with our personal circumstances. The hills look as if on fire. But if I change my position I see that what I took to be fire was really an appearance due to my position and produced by the light of the sunset. A book seems obscure and dull; with fuller knowledge it becomes both lucid and engrossing. A neighbour seems objectionable. I have not appreciated his character.

When I come to do so I believe in him, and take an altogether different view of his nature :

> " Why, what but faith, do we abhor
> And idolise each other for—
> Faith in our evil or our good,
> Which is or is not understood
> Aright by those we love or those
> We hate, thence called our friends or foes ! "

There is another sense, quite different from this, in which relativity imports that our direct knowledge is not of things as they are in themselves, but only as they appear in relation to our minds, and thus phenomenally. Kant and Sir William Hamilton, and the believers in the principle of Representative Perception, used the word in this latter meaning. But relativity may have yet a third meaning. It is alleged that, however much we exclude speculation about the metaphysical character of reality, and however earnestly we refuse to go behind actual experience, that experience is dependent on conditions, inasmuch as the observer employs, and is compelled by the constitution of his mind to employ, standard conceptions which exclude from him all but certain aspects of what appears. These conceptions may belong to the domain of physical science, or of biology, or of morals, or of religion. The task of the inquirer is in each case to discover what they are, and to define their characters and their relations to each other. For the conceptions mould the experience in which they are applied, and they are apt to give rise to the mistaken opinion that the phases they hypostatise represent separately existing and independent realities. Thus a living organism comes to be regarded as an entity of a kind different from a mechanism, and a mind as an entity or kind of thing subsisting in isolation from both. The alternative view is that through our conceptions we do isolate, but that we isolate only special aspects of reality, and do not distinguish independent realities as separately subsisting. If the object world is of a character not dissimilar from that of the mind, then, however much its existence be not dependent on the individual mind of the onlooker, it may well be that the process of distinction of aspects, which is one of making abstraction from all aspects with which we are not immediately concerned, is a process in which the mind

finds in nature something analogous to its own character in respect of its generality. Our experience may really indicate degrees or levels that are only intelligible as distinguished in the mind, although the mind does not put them there but finds them there. Existence and its *meaning* will thus be inseparable, in the fashion of which Kant thought in opposition to Berkeley. The world of nature will be a world into which concepts enter, in the sense that it is only mediately, by interpretation through them, and not by mere passive sense-awareness, that we reach what its reality signifies, and discover the laws which obtain in it. The methods of science in this way bring the observer into new regions, regions in which the notion no longer holds that nature can be taken as closed against mind in any but a provisional sense. For the object-world turns out to be an entirety, in which the differences between primary and secondary qualities, between, for example, molecular activity and the colour which results from it, no longer appear as differences between actually independent entities, or even as due to causes and effects belonging to separate sections of the actual. They will be differences which result from distinctions in the order of both knowledge and existence, in phases to be looked upon as belonging to a single entirety, and it will follow that whether we reach these phases or do not depends on the standpoints from which we find ourselves approaching nature. Our knowledge is in this sense relative; but not only our knowledge. The experience to which it is directed is itself relative, in that its reality involves the variety in level which the totality of the experience presents. The distinction between appearance and reality becomes one of degrees towards full comprehension.

What is before us is there, and is independent of the particular onlookers who are present along with it. It is discoverable for us only by means of observation and experiment, and not by *a priori* reasoning. The principles which have governed scientific method since Bacon laid its foundations apply undisturbed. The thing which we have to avoid is apart from these principles. It is the temptation, arising from carelessness or from want of knowledge, to slip inconsiderately from the terms of one order of thought which is appropriate to the facts which are actual into the terms of a different order which is not so

appropriate. We have to take heed, in the light which the principle of relativity casts on the problem of scientific inquiry, lest we employ our general conceptions uncritically and at large, and so fall into the blunder of confusing our categories. If we do so we shall in the end inevitably prove to have been false to the only facts before us, and to the application of the proper conceptions which they called for, conceptions falling within the order in knowledge that was alone appropriate. Should we fail to exercise the care over this that is needful we shall only add more illustrations of distorted apprehension and of failure to reach the real.

It is, as we shall see, with just this kind of significance that reality is said to-day, in philosophy and science alike, to depend on the principle of relativity. The source of the relativity may sometimes depend, in this new meaning, on conditions which affect observers whose knowledge is governed by a set of common conditions, so long as these conditions remain for them the same. Relativity may be due to such a set of conditions and even be the outcome of the very nature of the mind itself, to such an extent that the imagined line of demarcation between the mental and the non-mental world turns out to be only relatively a true one. It is relativity of this wide nature, further-reaching in its scope than is usually supposed, that I propose to consider in its various aspects throughout what follows. It is a relativity that is not subjective, in the sense that things are only to each of us what they appear to be. Man individually is not, as with Protagoras, the measure of all things. On the other hand, reality appears to be unintelligible apart from its relation to knowledge. But then individual knowledge itself may well turn out to be unintelligible apart from a structure which is foundational in the knowledge of every individual knower. Kant has made this view widely understood, whether or not he was right in his presentation of it. The schematism in the forms of space and time of the activity of mind in connection with his categories which Kant expounds, is worth study if only as a means of approach to modern physical problems. Kant did not, as the physicists of to-day in effect do, distinguish sharply between the intuitional and the conceptual aspects of our experience in space and time. A purely intuitional or

sensuous apprehension, the only one with which he imagined that he had to concern himself, does not lend itself to such a question as whether physical space is Euclidean or not. The distinction, with its far-reaching consequences, is one, as we shall see, that arises only in space and time into which concepts due to reflection enter, and the possibility of a derivative foundation for space and time was not one which Kant had before his mind.

The wider meaning of relativity I have now indicated in the general fashion which is all that is possible at this early stage. It does not import either that object can be reduced to subject or that subject depends on object. It does in the end import that we have to ask whether these are not themselves conceptions of a secondary nature, arising within mind or knowledge with a character that is foundational to both. If so, the principle of relativity may turn out to be not only a natural but an essential principle, if the universe is to be intelligible. The question of how knowledge in general has come into existence becomes a mistaken one. The real question ought to be quite different, as to how knowledge is conditioned in the individual who on the particular occasion knows, and as to the circumstances and history which have brought the conditioning about. For the first form of the question, which seeks to ask for an explanation of how there is any knowledge, in reality assumes the fact of knowledge as its presupposition, the very fact behind which it sets itself to go. The question in the second form, on the other hand, leaves it possible to treat knowledge as the foundational fact, and to confine the investigation to forms in which it discloses itself.

The distinction between these two questions is a vital one. It is a distinction that has been much neglected, and the neglect to take account of it has given rise, not only to much confusion of mind, but to various metaphysical systems of a transitory character, founded on more than dubious assumptions. The effect of these assumptions has been that those who made them have gone on to set up a gap between the mental and the non-mental which it is difficult to recognise as final in experience, either ordinary or scientific. The obscurity which surrounds the reality of this gap appears to be forced on our attention even in science, as some of its most recent

developments show. The apparent difficulties appear to be due, in part at least, to failure to take account of the principle of relativity itself. I therefore turn to the consideration of this principle.

I propose to refer in the first place to the fashion in which the principle in its modern aspect has been recently forced on our attention by the physicists. The most remarkable illustration of this is the teaching of Einstein. For, if he be right, he has been the initiator of ideas really more revolutionary than those of Copernicus or of Newton. Not only does he claim to have deprived space and time of their supposed characters as self-subsistent and uniform frameworks of existence, belonging to an altogether non-mental world, but he and those who think with him have given a new meaning to the most general of the laws of nature. An English mathematician, Professor Whitehead, has, as I will point out a little later, investigated the question in a different way, the importance of which is, I think, hardly yet understood.

Einstein's language is that of the mathematician, and mathematics is his chief instrument. This has its great advantages. Mathematical expressions possess an exactness depending on abstraction carried within definite limits to a high degree of perfection. They are the outcome of a consistent purpose, which is to disregard and eliminate all that is irrelevant to the end of presenting relations of order in externality in the most precise and general form practicable. Because they deal with what can be visualised in space and can symbolise relations of order of this kind to the exclusion of all else, they can be kept more free from ambiguity and from metaphor than the expressions of metaphysics can be. Mathematical language may thus, like poetry, be described as perfect speech, but it is perfect in quite a different sense. It deliberately looks away from quality, especially from that with which poetical imagery, for example, is concerned. It ignores all aspects of the universe other than those which can be brought under the special conceptions with which it deals. Now in such conceptions we have to do with entities conceived as indistinguishable from each other save through measurable relations. Apart from these relations they are not, in any pure form such as is required, recognisable, but, on the other hand, the rela-

tions require the entities as their basis. The entity and its relations are thus inseparable. Taken by themselves they are mere abstractions. But taken together we find in them the characteristics of fundamental arrangements in order which we recognise and express as the roots of the most general of all physical laws. The entities and their relations, whether we are thinking of them as point-events with their intervals or in any other form, we cannot immediately perceive. For perception starts from feeling of contact with our organism and is in itself chaotic and formless. It is only by interpretation that we recognise its setting in an order of universals which are inseparable from its reality for us, and this order, and the distinctions in it which give rise to definiteness and precision, are reached by interpretation made mediately through conceptions. The aspect of reality with which the mathematician has to deal, however final it may appear, and however independent it may be of a particular observer, is therefore conceptual, although it does not the less on that account stand for what is actual. He is not concerned with the question whether mind makes things or things make mind. He is the less inclined to trouble himself about this question because he has not before him any distinction between them which is either clear or relevant to his task. And his great advantage is that he has a multitude of visual symbols which he can not only operate but observe in their mutual relations.

It is easy for mathematics, in virtue of its methods of interpretation, and by abstraction from what is irrelevant to the purpose in hand, to bring what are thus general forms of reality, which the individual mind recognises as confronting it independently of its particular personality, into distinctness. It develops their implications and so reaches new knowledge. When the work is at the highest degree of generality, a borderland discloses itself between mathematics on the one hand and the territory of epistemology and logic on the other. To this borderland those on both sides have access. There is no barbed wire fence which prevents temporary crossings. Into the purely mathematical aspects of such doctrine as that of Einstein, few philosophers are rash enough to attempt to enter. Mathematicians talk in an admirably lucid language which is exclusively their own. But still it does not describe

all the ground to be covered, and it is only with further territory within the borderland that philosophy is concerned. From this territory it is possible to see something of the features of the other ground around it in more directions than one.

As I shall have to point out more fully later on, our knowledge of the world that seems to confront us is profoundly shaped by the conditions under which we know. In human experience the mind expresses itself only under certain organic conditions. Inasmuch as the organism is what nature has made it, we know in the first instance through our senses, among which the one that has the widest range is sight. But if all we found in experience was the sensations that come to the organism through the sense of sight we should have no objective world. It is, as we have seen, only in virtue of interpretation that such a world becomes present to consciousness. Mere isolated impressions could not give it to us. It is as understood, and by the aid of memory in which are connected the past and the present, that we become aware of the orderly arrangement of the coexistences and successions which underlie our actual world. Whether the relations that are essential to this awareness exist outside our minds, or only within our minds, or both, the result seems the same. But what is the character of these relations ? They are not themselves sensations, they are the intelligible setting in which the mind by interpretation finds what comes to it through sensation, but lies beyond mere sensation. When I look for the cause of some event that has happened it is because I envisage it as implying a relation to some event that I conceive as having preceded it. When I say that two and two make four I am establishing, or at least recognising, a relation that is no mere particular of feeling, but is of general application. I am, in short, always seeking to discover what goes beyond the sense of the moment, and is therefore not immediately perceived, but known by the introduction of reflection in some degree, however small. To this factual region of reflection the general principles which enter into my world belong, and, if they are found to be both reliable guides in the progress of my knowledge and wide enough in their application, I call them laws of nature. They are really very general relations which disclose themselves to

all men who inquire under the conditions that obtain in common for them as in my own case. Extended observation through experiment and the detachment of attention from what is irrelevant enable us to generalise inductively, so as to reach principles which apply to varieties in actual experience. Not only do these principles give to that experience a fuller meaning than it possesses apart from their underlying implication in its nature, but they enable us to predict and to extend it. They are not the less, because of their accordance with experience, creatures of reflection. They have no significance apart from their recognition, and they belong to the interpretation of experience, arising only in mediate knowledge of a general kind, different altogether from the isolated sense of impressions made on the extremities of the nerves.

All our knowledge of nature is of this sort, but a great deal of it is concerned with relations of quantity, which depend on things being experienced as apart from each other in space or in time or in both. Indeed, space and time appear to be themselves got at by generalisation from the apartness of events. It is not through differences in quality that they possess their main importance. This they have in relation to differences in position or order, without reference to the colour or other characteristic and individual qualities of the things themselves. When we compare these latter characteristics we may not primarily be concerned with position or order at all.

This, stated briefly, seems to be how we come to the notion of our world as displaying quantitative order, and to space and time as the characteristic forms in which that order is displayed. But these are merely general relations. For to get at a clear conception of them we have to leave out of account all considerations relating to the individual peculiarities of the objects they contain. We may even have to make abstraction of our attention from the whole of the objects that fill them. Our knowledge about space and time simply as such is therefore abstract knowledge, and in so far imperfect. We perceive immediately and directly neither empty space nor empty time, any more than we perceive objects otherwise than within them. They are only conceived, not perceived, in their abstract purity. They are relations which reflection discovers and disentangles. But having disentangled

them, people have been in use to take them, not indeed as forming a part of their world as particular objects existing independently, but as a kind of actually subsisting framework in which objects are set, and so as belonging to the actual in the same fashion for every kind of individual observer, however he may observe and without reference to any conditions. In this respect space and time are usually spoken of as though absolutely real, and as being there just as they seem to be. Newton took this view. A generalisation such as this becomes invested with a high reputation for certainty. The world often generalises confidently with even less ground for conviction. It took a very long time before extended and accurate observations succeeded in getting rid of the Ptolemaic view of the heavens and of the old-fashioned corpuscular theory of light and heat. We must draw inferences and so generalise to a cause or a law if we want to get a rational explanation of the facts, and, if our earlier rational explanation will not fit them, we then look for a new generalisation. That is due to the finite and relative character of our knowledge, and it is also the explanation of why we are apt to stop prematurely in the task of explanation, and to get ourselves entangled in what is only conventionally true, instead of having reflected and interpreted on a basis so wide and so uniform that it is found to explain all the facts, and to give what we can call properly a law of nature.

Our current notions of space and time are illustrations of results of generalisations which, if Einstein is right, are, although wide in their basis, yet quite inadequate. So far from being frameworks in which, as perceived by us, things exist in the same way under all sets of conditions, and which are always absolutely uniform, he says that it is due to the position of the observer that they present themselves with the shapes and measurements we attribute to them as being of their essence. It is only relatively that the current ideas of the relations in them of objects are true, or that they themselves exist as they are. For the space and time which we observe may derive their forms from the conditions affecting the observers, and so may turn out to be, not absolute, but only varying systems. The outcome of Einstein's doctrine is a new and more searching set of generalisations about space

and time, and the objects in them. The necessity of a change in point of view is asserted to be that the old theory will not fit the facts, as fuller observation has ascertained their nature. If he is well founded in what he says, we have now to accept certain consequences of the principle that we can only describe with accuracy the positions of objects in nature if we bear in mind that their relations in space and time are relative to the special co-ordinates or systems of reference of the observer and vary accordingly. Newton thought that space and time presented frameworks of reference subsisting independently of the observer, and that, if we had once fashioned for ourselves adequately a set of co-ordinates for them which were unvarying, this might be relied on as a standard for universal and not merely relative truth in measurement. Now there may be a great number of observers each relying practically on a similar frame of reference, and, in so far as all of these refer to it, these observers will to that extent have a general and not merely a subjective or individual outlook. Still, their collective standard is merely relative, inasmuch as it depends on the co-ordinates which the whole class of these observers employ in common, co-ordinates which may, by their nature, be only relative. The task of the mathematical physicist is, therefore, to dig deeper down in searching for universally true foundations for measurement and quantitative knowledge generally. He has to clear his mind, not only of prejudices in favour of the absolute character of space and time, but of other prejudices on his way. We talk of force as if we knew what we were speaking of. If we were concerned, as are followers of Schopenhauer or Bergson, with what for them is direct or intuitional apprehension of will power or of creative energy, we might attach a definite meaning to the word force. But, in the capacity of physicists, concerned only with the observation of quantitative change and of alteration in position, we cannot do this. All we actually observe is variation in the situations of things relatively to each other, and even the phenomena of what we have been used to put down to the account of some force acting at a distance can as a rule equally well be stated exhaustively in terms of mere variation of situations arising from the relative positions of the observer. If a lady drops her parasol and

it seems to her to be attracted by gravitation to the muddy pavement, it is not difficult, if we make an effort to free ourselves from unconscious assumptions, to represent this adequately from another conceivable point of view. For an observer with a sufficiently powerful telescope, and himself at such a distance as to know nothing of any gravitational attraction from the earth, it might appear that the earth and the lady were moving upwards with an accelerating or increasing velocity, and that when the lady's parasol slipped out of her hand it at that moment lost its accelerating push, and relapsed into a rate of motion upwards that was uniform and without acceleration. In consequence it would be obvious to the distant observer that the accelerating pavement and the mud had overtaken it, instead of the parasol having descended to them. The approach in position would, for such a distant observer, with co-ordinates of reference other than those of the lady on the pavement, be one of the earth relatively to the parasol, while for the lady the change of position would be, according to her mundane co-ordinates, one of the parasol relatively to the pavement. In each case the phenomenon observed would be observed as it actually happened, and appear as it did simply because of the special position of the observer. The relations described, whether spatial, as in direction and distance, or temporal, as concerned with time in the beginning and ending of the journey of the parasol, would depend on the standards of the observer for their reality, which would therefore be relative only. What Einstein has sought to do is to clear out of the most fundamental conceptions of physical science conventionalities and prejudices which prevent us from arriving at a view which will explain all the facts and not only certain of them. It is because the old system could not account for what was observed in connection with such facts of observation as the movement of the perihelion of Mercury, the ultimately ascertained deflection of the rays of certain fixed stars when passing the sun, the principle which actually governs the electro-dynamical activity of electrons, and the apparently constant velocity of light, that the school of Einstein found it essential to try to penetrate more thoroughly, in order to discover reliable foundations for the basis of our scientific knowledge of nature.

One of the difficulties people feel when, as so many now do, they read about relativity, is especially that over time. It is hard to grasp that time not less than space is, taken in isolation, a mere abstraction. It is difficult to realise that time and space really imply and depend on each other, in notion as well as in fact. The idea that there is an absolute framework of time and a quite independent absolute framework of space is not easy to avoid. For we have been schooled to it, and the idea works well for the purposes of everyday life on our globe. But if both space and time are stripped of what is unessential, and presented in their bare nakedness, they look different. If there were no succession in time, and everything appeared as at one instant, a little reflection shows that we could not apprehend the positions of points in space. Their reality depends for us on their separation, which itself depends on transition, and this on succession in time. On the other hand, if, in the absence of all separation in space, there were only one spatial point in which existence centred for us as time elapsed, it is equally clear that intervals of time would have no meaning. Duration would be immeasurable, for it is by spatialising, as on the dial of a watch, that we measure it. Space and time are really abstractions from a reality which includes both in mutual implication.

It seems, then, that the new system which we are considering is not that of any merely psychological or intuitional space and time directly and completely given in direct sensation, for this could not be resolved in the way the facts require, but only one of interpreted space and time in which our perceptions are correlated. The psychological data are only the beginning. We construe these into an objective space-time manifold, not merely for the purposes of science, but as a necessity of our daily life. Our space and time may well be real, but reality has now a relative meaning. Apart from construction there could be no world before us. Our visual and tactual impressions we have invested with importance by interpreting them as in relations which are conceptual in character, in the sense of implying reflection and not mere feeling. It is not as frameworks subsisting as self-contained phenomena independently of the objects in them, such as are the independent space and time Newton

thought of, but as what gets meaning only in our thought about them, that we really discover space and time in our actual experience. Physics does not deal with bare sensations, but mainly with the coincidences of *events*, coincidences which are not immediately presented in experience. That it has so often to describe the nature of such coincidences by means of differential equations, dealing with notional aspects of reality, shows this to be so. Its magnitudes and laws are more often than not altogether non-sensory. This does not, however, signify that they are not real. The conception of an electron may or may not be a final one, but it indicates what is recognised as a real connection or complex of actual objective factors. The picture of the world, as recent physicists present it, may or may not be a final one, but, so far as it goes, it accounts for the facts better than does that framed by an untrained mind. It is abstract, of course, in the sense that there is much in our rich and varied world which it leaves out of account, but it gives us a system of symbols by means of which we can interpret, predict, and indirectly extend our experience. There is therefore no reason why we should not treat the scientific objects, which the physicist discovers by interpretation, as being at least as real as the bare and unstable intuitional elements so called, from which our experience is popularly believed to start. If a system of judgments such as that of the physicist gives us a theory which is the only one that covers and explains the facts, and enables us to pass beyond what is immediate, and to forecast the future accurately, we have evidence that entitles us to treat it as presumably true of reality.

Before closing this chapter it may be convenient to refer to the import of some words used which must be used again. It has been pointed out that the actual facts we know are always individual or singular, and yet imply a general aspect as well as one of particularity. The cow that I am looking at from the window where I am writing, I know to be what it is in virtue of its general character as belonging to a class of animal. I also know it as this particular cow, here and now. But although I separate them in reflection I have no knowledge of these aspects as self-subsistent entities in my perception of the individual animal. Jersey cow is a general description, depending for its application on a definition. But I know

nothing of a Jersey cow in the abstract. What I do know is that I can recognise a particular animal as belonging to that class. Nor have I any experience of a cow that belongs to no class, for at the least I recognise the animal as a cow.

Of what is general or universal *per se* I have therefore no experience. Nor have I any the more experience of what is purely particular. When I look at the cow or point to it I say that it is this cow here and now before me. But "this," "here," and "now" become "that," "there," and "then" when I turn round. They, too, are universals. The barest sensation has universals in it. Had it not I could not distinguish and so be conscious of it.

Everything therefore turns on the aspect on which I concentrate my attention. The general and the particular are ideals in my knowledge without self-subsistence apart from my reflection, but one or the other may be what is important to attend to. The particular factor is never absent, but I may divert reflection from it if it is unimportant for my purpose. Take an algebraic symbol, say x. It is a variable. It symbolises not any arithmetical number as a singular, but all or any of such numbers in so far as they belong to a class in virtue of certain properties. Still, I think of it as an x, a mark made with ink on a piece of paper. This helps me much. The mark serves as the substitute for a great number of processes of thought that are implicit but irrelevant to my immediate purpose, which is to extend my knowledge about the properties of the class to which x belongs. I gain fresh knowledge by doing this. If $x = y$, then $x^2 - y^2 = 0$. That is a very simple illustration of how, in mathematics, progress is made by distraction of attention, resulting not only in economy of thought, but in its extension to new properties of classes which are true whatever the particular numbers that fall within the classes. The symbol applies to all or any of the numbers that belong to the class. It is in itself a singular, but it is symbolic of a universal, and can be treated as taking the place of that universal in a multitude of operations visualised on paper or in imagination as there for sight. What is dominant is the general aspect that is separated out by abstraction as important for the purpose in hand.

The same thing is true when I am dealing with what

belongs to ethical or artistic knowledge. If I say of what I am looking at that it is good or beautiful, I am recognising in it a value. Now, as we shall find, certain values are foundational in knowledge in the same sense that knowledge generally is foundational. They cannot be resolved into particular sensations of pleasure. For these sensations are only recognised as such when somehow classified as giving pleasure or the reverse. In such recognition value of some kind is attributed to them. The value may be of a high order or of a low. But it is a value, and as such it imports what is general, although here, too, we never can get away in our experience from a factor that points to what is particular and fleeting. We can see this if we try to picture to ourselves what "valuable" means. It is always *something* valuable, of which we make an image when we reflect on it. Even the goodness of God is of this nature. The language of the Scripture and of poetry illustrates the fact.

All this is the outcome of the character of knowledge. It is in its essence individual. The difference between what we call general knowledge and knowledge in detail is one of degree. The degree lies in the emphasis which we lay on the aspect on which we are concentrating, and this turns on the purpose in hand. It is the freedom that is characteristic of thought which enables it to lay stress now on one aspect and now on another. But thought always starts from what is individual, and from this it never gets away.

As it is with knowing, so it is with the known. They are correlatives and have the same character. It is only by abstraction that we distinguish in them the general from the particular, and suggest to ourselves that these have existence independently of each other. That was what Aristotle meant when he said that there was nothing in the intellect that had not been first in the senses. He might equally well have put the principle the other way round. But the power of distinguishing by making abstraction may be very important. The method of the mathematician shows this. The method of the artist shows it not less. It is common to hear people say that art is concerned with feeling. This is quite true. Colour and shape are its material. But these are important only in so far as they are made symbolic of value, and value,

as we have just seen, is as much of the character of the universal as are the abstract conceptions of the mathematician. Values vary in quality, and it is the business of the poet and the artist, and of the critic in literature and art, to know this, and to be able to discriminate between values and to place them in their order. Reflection is always present, explicitly or implicitly. It makes us aware that truth and beauty and goodness have final and foundational value, and that beyond them we cannot pass, or express them in terms beyond their own. There are other values, but for the most part they are derivative and merely relative, and they are sometimes false in contrast with the value that is final. It should be added that values are expressed, not as a rule as abstract principles, but as ends. They have not the less on that account the moment of the universal as essential in them. That is because they belong to knowledge in the widest sense of the word.

CHAPTER IV

RELATIVITY IN AN ENGLISH FORM

The year 1919 witnessed a remarkable change in the attitude of British physicists towards the old Victorian ideas of space and time. Four years previously Einstein had developed his principle of relativity, and had given it in full form to the mathematical public. His view was revolutionary. It will be necessary to refer to it later on, and for the present it is enough to say that if true it implies the upsetting of the conventional ideas about the meaning of measurement. Till then space and time had generally been accepted as what Newton believed them to be. They were regarded as resembling independent frameworks, everywhere uniform and unchangeable, in which events took place. They were looked on as absolutely objective, and as wholly independent of the conditions under which objects in them were observed. Few people had even suggested that the measurements made in them could in any way be affected by these conditions.

But Einstein had insisted on the relativity of the units measured to the position and standards of reference of the observer, and, as a consequence, that the geometry required to explain the universe would be found not to be restricted to that of Euclid, but to extend to a variety of alternative systems, varying with circumstances of which full account must be taken. There was no such thing for him as a position of absolute rest from which to calculate; for rest was in itself only a relative term. A man in an express train might seem to another standing on the embankment to be in rapid motion, but, so far as his system of estimating form was concerned, there was no real reason why the former should not just as much consider himself to be at rest, while the railway line, on which he looked down from the carriage window, flew from

under the wheels and carried the other man along with it. Such a suggestion offends what we call, with practical justification, common sense, but the discrepancy arises out of general habits of thought and expression, adopted to render possible conformity with the requirements of social intercourse, and these are not final for analysis. The reason for questioning such thoughts and expressions from a wider standpoint appears less startlingly extravagant if a different illustration is taken. An observer of the heavens standing on our earth treats himself as observing the sun from a stationary position on the earth, and as being therefore at rest. As a matter of fact we know that the earth on which he stands is moving round the sun with gigantic velocity, and must appear so to an observer on the sun. The points of view of the two observers will therefore be so different, and in such constant change, that it is easily demonstrable they must be characterised by great differences in the results of observation.

Applying the same principle to the interpretation of the phenomena of gravitation and using a powerful calculus, Einstein had succeeded in making a precise estimate of what ought to appear to be the deflection of the rays coming from certain distant fixed stars, influenced by the gravitational attraction of the sun on the passing rays. The idea of such a deflection was familiar and its lines had been calculated by others on the footing that space and the paths of light in it were under all conditions of the same character. The actual deflection could only be observed during an eclipse, and on the 29th of May 1919 such an eclipse was to take place. Einstein predicted that, as the result of relativity, the actual deflection would, if observed, prove to be by a definite amount greater than it could be if the Newtonian theory of absolute space were true. The English Astronomer Royal took up this challenge in 1917, when, the war notwithstanding, the details of Einstein's calculations had reached this country. In 1919 two English expeditions were sent out to West Africa and Brazil respectively. Successful observations were made. In November the Astronomer Royal announced the results to the Royal Society. Einstein's calculation had proved to be substantially the true one, and something like a revolution in a great department of scientific thought was the result.

I shall refer later to some of the important consequences of the new view for philosophy. For the moment I am concerned with its bearing on the old Victorian idea of nature which had been inherited, so far at least as space and time were concerned, from Newton. As to that idea there is preponderating agreement that it is now untenable, but its rejection is already giving rise to much controversy as to what should take its place. One school of mathematical physicists seems to tend towards mentalism of some kind in its treatment of space and time. A different school tends to regard what we call relativity as an objective phenomenon, belonging to nature and capable of being readily recognised as belonging to it if we will only be in earnest in rejecting the bifurcation doctrine of the older physicists. This rejection must of course carry with it the denial of any framework of space, time, points, instants, and other relations within that framework, if taken to be existing as absolutely self-contained in unvarying form and independently of secondary qualities.

It is safe to predict that there will be hereafter much discussion of the question thus raised. Already the mathematicians are over the border-line, and are at work in what used to be considered the domain of the metaphysician. Perhaps it will turn out that the title deed of the latter is not wholly inoperative, but he seems, at present at least, disposed to look on his brother the mathematician, not as a trespasser, but rather as a long-expected and welcome guest.

The problem over which the various schools of mathematical physicists tend to dispute seems to emerge as the result of certain assumptions. If our minds are self-contained things, confronted by another self-contained thing called nature, it is difficult to account, either for our knowledge of relative space and time, or for any other sort of knowledge. For in that view, knowledge will consist only in our particular impressions or our general conceptions, regarded as belonging to a thing we call the mind, as properties or instruments. The question will then arise, impressions or conceptions of what? Moreover, if the reality we know consists in something different from and independent of the way in which the mind conceives it, the further question arises as to what this something can be or can mean. New Realism, as will be

seen later on, has appreciated the difficulty, and has treated the non-mental world of nature as including, not only particulars, but universals, which we seem to *find* there and so become acquainted with. But another school has pointed out difficulties in the way of this answer, which arise from the assumption, if it is still maintained, that the mind is a thing. The latter school has held to it, in terms which have varied through two thousand years but have embodied the same principle, that it is a fallacy to treat mind as a thing. For what it is for us appears rather to be a form falling within knowledge itself, and if so it is within the ultimate fact of knowledge alone that the nature and origin of what we call our minds, with the particulars and universals alike that belong to their nature, must be sought. In that case impressions and conceptions can be separated only by abstractions made within knowledge. The individual forms which arise for it, alike as expressed in the character of a world external to mind, or of a mind as conditioned by its self-presentation as an individual entity confronting that world, must themselves seek their explanation within knowledge so interpreted that behind it there is no sense in trying to get. The relativity of the physicist becomes in this way only a special case of relativity of a wider order. It ceases to be a question which concerns the man of science specially how mind is related to nature, and how the contributions of each to the object in our knowledge are to be apportioned. The physicist, indeed, cannot enter on the discussion of this topic without becoming a metaphysician. What he has to do is to search out and be conscious of tacit metaphysical assumptions.

But it may well be that he can, without going a long way into philosophy, and even if he abjures metaphysics as highly dubious, come to a clear understanding with himself as to the true character of his method and its results. This is what the older physicists failed to do, and the assumptions they unconsciously made in consequence landed them in dogmatism. I shall presently illustrate the thoroughness with which this dogmatism has been brought to light by a distinguished British physicist of to-day, who seems to me to have delivered the question of physical relativity from a good many of the difficulties with which it has been surrounded. But

to this illustration I shall not be in a position to proceed until I have said something more about Einstein himself. I ought to add here that I am fully conscious that the present chapter may not be found by the general reader to be an easy one. It comes in at this early stage because the explanation of the general principle renders it almost essential that it should do so. But the reader may find the topic less forbidding if he turns first to the next chapter, which seeks to explain, so far as is necessary for philosophical purposes, the way in which the doctrine of relativity in measurement has been developed by Einstein and his school. At present I am concerned to show how our knowledge of nature, taken as given by science itself without twist or bias due to *a priori* assumptions, points us in the direction of the broad principle of relativity. The advantage of dealing first of all from a general point of view with the principle as rendered by Einstein is that it enables the student to see the limits within which his work, great as it is, has been confined. The object of what immediately follows is to get at the explanation, not only of the shape given by him to the principle, but of the mode of its introduction into the sciences of physical nature. Before this can be done we must have in our minds at least the general character of his doctrine. In the first place let us see what for Einstein himself are its broad features, reserving the details for a subsequent stage.

Stated generally the teaching of Einstein is that absolute rest and motion are meaningless for physical science, and that motion can signify only the changing positions of bodies relatively to each other. This is the sole sort of physical change of which we have experience, and the idea of an absolute motion is a metaphysical invention of the school of classical mechanics which is associated with the great name of Newton. The latter, as already observed, believed in space and time as in themselves independent entities, and as unaltering frameworks within which each phenomenon of nature had its special position. This is the view which Einstein has attacked. The strength of his position lies not only in the consistency of his reasoning, but in the circumstance that he is able to do what the older school could not, to give a clear account of the reasons for certain things in nature which are apparently inexplicable

otherwise. The basis of his explanation is that all measurement of spatial distances is really performed, not by reference to any absolute spatial standard, such as an imagined æther might give, for none such can be shown to exist, but by comparing the relative positions of bodies as observed. It follows that, if the comparison is intended to result in a reliable *measurement*, the phenomena compared must be *interpreted* with reference to the relative situation and other conditions affecting the observer and the co-ordinates employed by him in measuring. As space has no self-contained nature, it cannot have attributed to it any necessary conformity with Euclidean principles, or indeed with those of any other particular geometry. Such principles cannot govern the constitution of its varying appearances under differing conditions of observation, for they may not apply to the facts.

Applying this principle Einstein was able to demonstrate without difficulty why the velocity of light must always appear to be the same, whether measured from a body approaching its source with a great velocity or from one at rest. In the case of two situations for observation, one of which was in uniform rectilinear movement relatively to the other, it was an established fact that the velocity of light coming towards the observer was in each case found constant, at 186,330 miles a second. This well-known circumstance was shown by Einstein to have an adequate explanation which did not require any unlikely hypothesis, such as some conjectural property of the æther in contracting the measuring standards used by the person passing through it when moving towards that source. It was completely intelligible as soon as it was seen that when making his measurements his standard of reference depended on his situation, and that he was consequently interpreting units which possessed a meaning different from that of the units measured by another observer relatively at rest to him.

The impressive conclusions of the Einstein doctrine do not stop here. Classical mechanics regarded the inertial mass of a body as an absolute and invariable characteristic quantity. But according to the deductions from his principle of the relativity of rest and motion inertia of matter signifies no more than energy stored up or held back in it. As the outcome of this everything

that we know of the inertia of energy holds without exception for the inertia of matter. Now the general principle of relativity of all motion had led Einstein to yet another sweeping conclusion. It is well known that bodies which move under the sole influence of what we call gravitation so move without reference to the nature of the body. For instance, a piece of lead and a piece of cork fall (if *in vacuo* and so undisturbed by currents of air) at the same rate. The acceleration is independent of the difference in material. This led Einstein to infer that gravitational mass is in reality indistinguishable from inertial mass. The same quality will therefore manifest itself to the observer as weight or as inertial energy, according to his circumstances in observing. This leads to the definition of a new principle, that any change which an observer perceives in the motion of a body as due to gravitation would be perceived in exactly the same way if there were no gravitation, provided the system from which the observation takes place be moving with an acceleration suitable to the supposed gravitation as it would appear from his point of observation.

Of force physicists know nothing. What they experience is only change in relative position. If, therefore, it is once established that gravitational and inertial energy are the same thing regarded from different standpoints; that the inertia of matter is only the inertia of latent energy; and that the unit of measurement for both space and time varies, according to the conditions of the observer, in the interpretation that must be given to it, many consequences ensue. Some of these are slight. Newtonian physics remains approximately true for the small calculations of distance which are all that we require for everyday purposes on the earth. But when we turn to our relations to the heavenly bodies, the case may be enormously different. And even for us on the earth there may be tremendous consequences. These may not develop practically for a long time, but we cannot be sure whether the new scientific outlook may not suddenly bring about some unexpected and practical transformation. The business world is just beginning to ask questions about this. I translate the following passage from a recent article by a shrewdly-minded Berlin engineer. The point he raises is now a familiar one. There is nothing new

in it, but it suggests questionings which may affect practice.

"According to the new light which science is throwing on the constitution of matter, we may be sure that the gigantic store of energy revealed can be looked for only in atomic structure. Even existing knowledge about its dissolution in connection with radio-active substances has indicated to us similarly startling monstrosities. A gramme of radium, in its complete self-conversion into lead, exhibits the tenth part of the very amount of energy which, according to the theory of relativity, must be developed by its dissolution into nothing, and in the course of such a conversion it appears to lose 10 per cent of its mass. The phenomena of radio-activity thus yield a strong confirmation of the result of the theory of relativity. While we are standing to-day powerless when confronted with the atomic dissolution of the radio-active substances, just as did primæval man before a forest conflagration, the theory of relativity tells us that it must be possible to break up the atoms of any mass we encounter, and to win from it the gigantic amounts of energy that are there latent, In this fashion the theory, which has come into the world in a form so entirely abstract and mathematical, presses on us guidance for the practical technical work of future centuries. It places the task of obtaining new sources of energy so sharply before us, so clearly and so precisely for calculation, that it will be surprising if in practice we do not pretty quickly attain to the accomplishment of this task."

This writer estimates that there is as much heat energy latent in a thimbleful of ordinary matter as there is to be got by ordinary processes out of 3,000 tons of coal. For the present we can, by very wasteful methods, convert a mere percentage of the latent energy of the 3,000 tons of coal into kinetic heat energy. How soon will the great scientific discoverer appear who will show us how to get the like amount from a thimbleful of ordinary earth ? It may be a long time, but we do not know. Genius, when it appears, has wings with which it mounts in a fashion that astounds us. Newton and Einstein are examples from which we do well to take heed. We shall be wise

if, as a practical nation, we listen to the new warnings which science is now giving us in however general a language. We cannot foresee what new developments knowledge may bring for industry. We have to watch and study and experiment. Otherwise, we may find ourselves in the position of those foolish virgins who were surprised by the midnight call while their lamps were yet untrimmed.

For the moment all I am endeavouring is to indicate in bare outline the general character of Einstein's revolutionary discovery. It is a triumph of mathematical genius and of the power of scientific imagination in adapting the ideas of his great predecessors, men like Gauss and Riemann, to the solution of problems of which they hardly dreamed. What I have suggested is that the principle of relativity in physics, as Einstein has conceived it, is one so far-reaching that it is of importance for any theory of the ultimate character of reality. This is a question on which Einstein himself, a mathematician and physicist, has touched but little. There are, however, disciples of his, both in Germany and in England, who have given attention to it. The tendency has apparently been to treat space and time as meaning different things, according as they are regarded from the standpoint of ultimate analysis by mathematicians and physicists, or from that of the intuitional or psychological view of the observer. The two kinds of space and time are, according to such writers as Moritz Schlick of Rostock, who is a professor of philosophy as well as a mathematician,[1] " essentially dissimilar and incapable of comparison with one another; but have, as our experiences teach us, a perfectly definite and uniform functional relation to one another." Space and time, as governed by the principle of relativity, appear to be regarded by Professor Schlick as not being the space and time directly perceived in intuitional experience, but as being of a non-intuitional or conceptual character which has its foundation in what is a four-dimensional manifold, the existence of which is, so far as we are concerned, arrived at only by inference. But this suggests a splitting up of experience into sensations and conceptions which seems to have but little warrant in the actual character of that experience. It

[1] *Space and Time in Contemporary Physics*, Eng. tr., p. 89.

appears to be an attempt influenced by a superstition inherited from Kant, who sought to treat space and time as if they could be self-contained pure forms independent of concepts. It is a view which arises naturally only if the mind is taken to be a sort of thing with knowledge, including the forms of intuition, as its instrument, and the object as in some measure self-subsistent. But a Kantian may still seek to hold it in a guarded form, and so may others who go further than Kant in the same direction. What Kant said on the subject of space and time as mere forms of intuition, and therefore of a self-subsisting and independent character, was subsequently examined by Hegel in a criticism that has not been much studied either here or in Germany.[1] For the latter the pure form of time was just an abstraction. Its real character was that of *Angeschaute Werden* (Becoming as directly apprehended), and of being as such inseparable from space. Space, taken by itself, was for Hegel the most abstract and general form of externality, consisting in mutual exclusion without definite internal differentiation. But time, on the other hand, was for him more than merely the spatialised, and so distorted time with which mathematics deals. " It is only in an arrested, paralysed form, only in that of the quantitative unit," that it is dealt with in mathematics, in order, for the purposes of mathematics, to get an " indifferent, external, lifeless content." Here Hegel and Bergson come near together.[2]

Now this suggestion is a very different one, not only from Kant's view, but from that of Professor Schlick. The latter recognises a world existing in a second kind of space and time, apparently harmonising with but not the less independent of the two pure forms which figure in the *Critique of Pure Reason*, the first conditioning all externality, the second inner experience as well. Some Kantians in Germany, looking on this as a heresy, have accordingly not been grateful to Professor Schlick. Ewald Sellien, for instance, has written an acute but comprehensive essay on the subject, *Die Erkenntnistheoretische Bedeutung der Relativitätstheorie* (Berlin, 1919). It is an essay worth study, by mathematicians as well as by philosophers, for in it the shortcomings of both are dragged

[1] *Werke*, vii, paras. 254 and 258.
[2] *Werke*, ii, p. 35. (Preface to the *Phenomenology of Mind*.)

to light with some precision. He discusses the philosophical foundation of the principle of physical relativity, taking the positivism of Mach as his extreme case, and contrasting this with what is for himself the real Kantian view, which he defends. As to Schlick, who does not go as far as the so-called " positivists," but thinks that a relativist may still remain a good Kantian, Sellien considers that, although this may well be true, Schlick has misinterpreted Kant's teaching, by distinguishing space and time into kinds, one of which is " physiologico-psychological" and the other " physico-logical." But for Sellien, Kant's pure forms of intuition are quite free from any physiological or psychological element, and are forms of a pure intuition which has nothing whatever to do with the material that in truth presupposes these forms only for certain aspects of its order and arrangement. When Kant speaks of relations within such pure intuition he is at most concerned only with rules for construction in it. We cannot form an image of two equal straight lines, but we can invoke a rule for their construction in space, and so obtain a principle which makes it possible " to draw true conclusions from bad figures." Euclidean geometry is for Sellien the appropriate system for Kant's form of space. But it is for Kant no necessity of thought, and other geometries are intelligible which, while referring to what is Euclidean as their presupposition, can be made to represent conceivable " objective and perceptual space systems of other kinds, with equal logical and mathematical validity." That these are primarily conceptual does not detract from their claim to be true of the ultimately real. Thus, according to Sellien, the theory of relativity can be accepted consistently with the philosophy of Kant. For after all it is not with the merely general and abstract character of space but with the relations of objects in it that relativity is concerned. He quotes with approval Max Planck as rejecting the " positivist " view, and declaring that although physical science starts from sense-impressions its principle is to get from these to what is independent of subjectivity (endowed with at most mere forms), and possesses universal and objective truth. This must lie in a reality independent of the individual physicist. Planck, to whom a reference will be made in the next chapter, appears to be, for reasons

connected with what is known to physicists as the " quanta " theory, a sceptic about the general or wider principle of Einstein in reference to motion.

But Planck, and of course Sellien himself, will have none of merely empirical " positivism." Its view of the objects of physical science reduces them to the coincidence in space-time of elements in passive awareness. Such elements as immediately and indirectly experienced are for positivists such as Mach the sole reality. When in physics we speak as though coincidences of a less immediate nature were actual, we are only using abbreviated modes of speech. The conception, for example, of the physical world as based on a four-dimensional reality, its space-time continuum, is no more than an abridged statement of the correspondence of subjective time-space experiences through the various senses.

According to the writer I am quoting, Sellien, this principle of " positivism " has influenced unduly not only Einstein but his predecessors in his own field of work. For them mathematics has been only a branch of physics. He cites Gauss as having said : " I am coming more and more to the conclusion that the necessary character of our geometry cannot be proved. . . . Geometry must have the same rank assigned to it as physics." Sellien declares that Riemann and Helmholtz took the same view as Gauss, and that Minkowski, Freundlich, and Einstein have followed them in it. He is not sure that this is as true of Minkowski as it is of the others, inasmuch as he, in the famous address on Space in Time referred to in the next chapter of this book, expressed the opinion that ordinary three-dimensional geometry is only a chapter of four-dimensional physics, and could be deduced from the latter if the time co-ordinate was always treated as zero. For himself, and those who like himself believe in Kantianism, Sellien sums up his conclusions thus : " In the problem of space-time what we are concerned with are questions of measurement, and not questions relating to space and time as forms of intuition." The doctrine of Kant is not, he thinks, inconsistent with that of Einstein, but the doctrine of Newton is inconsistent with it. The problem of Kant was of a nature quite distinct from that of Einstein, but wherever there is contact there is no real obstacle to harmony.

I have thought it worth while to refer to the controversy in Germany about the foundational principles on which relativity rests in order to show that the " bifurcation " tendency has had its analogue there, although in a different form from that which obtains in Britain. I will only add that even Kantianism itself cannot be said to be free from the tendency to disjoin the various characters manifested in experience.

Now this supposed disjunction or bifurcation is being stoutly contested, at least in this country, from a scientific point of view. It is interesting that an explanation has been insisted on in England of the whole doctrine of relativity which not only denies the disjunction, but is more thorough in the logical treatment of relativity than anything that I have so far become acquainted with in the works either of Einstein himself or of his disciples in Germany.

The author of this explanation is Professor A. N. Whitehead, who has set it forth in detail in two recent books, *The Principles of Natural Knowledge* and *The Concept of Nature*, books which must be studied together if they are to be fully understood. The writer is not only a mathematician of eminence. He is equally distinguished in the new department of mathematical logic, a department in which he and Mr. Bertrand Russell, with a small but distinguished group of well-known writers on such subjects as number, in France, Germany, Italy, and America, have been pioneers. If the questions dealt with were purely mathematical, I should not presume to comment on the argument about them. In that case the task could fall only to one adequately trained in the very highest mathematics. But as a matter of fact the inquiry is not only one that is logical as much as mathematical, but it conducts the student into a region which is obviously a region of metaphysics, a fact which is apt to become overlooked. Not by Professor Whitehead, for he is not only aware of it but is careful to disclaim any philosophical assumption. Still, he pushes his method of logical analysis to a point where it seems to me to have taken him over the borderline, for reasons which I shall have to indicate later on. Meantime what I am concerned with is to show, by reference to his teaching, on how different a footing he has sought to place the doctrine of relativity from that on

which it has been left by Einstein and his disciples. From their practical results Professor Whitehead does not dissent, and he fully accepts the greatness of Einstein's discovery and of its consequences. What he does is to exhibit it in a new meaning. I may add that in the borderland where the mathematician and the logician and metaphysician meet, the conceptions employed by the first have the almost paradoxical character of presenting less of strangeness to the latter than do their results to many highly trained mathematicians. Just as a merchant may not be able to add up his bank-book as correctly as the bank officials can (and I have known even a senior wrangler to be wanting here), but yet knows from a standpoint different from that of the expert a peculiar significance which the result has for himself, so Gaussian co-ordinates and tensors present a significance for logic and metaphysics which is something additional to that which they have for one who is a mathematician alone. It is this further significance, always giving rise to new problems which lie beyond the domain of the pure mathematician, which invests such conceptions with unusual obscurity for him. The difficulty of following them presents of course great trouble to the philosophers. But the significance of the standpoint attained may seem less strange to the philosophers on whose studies it bears closely, although they find much difficulty in treading in the steps by which the pure mathematician has been able to climb up to it. Something analogous seems to me to be true of such special sciences as biology and sociology. All such sciences tend increasingly to illustrate the fact that knowledge is really an entirety, the aspects of which can be separated only provisionally.

As I have observed earlier, Professor Whitehead is resolutely opposed to the old Victorian view of the division of nature into what exist only subjectively, the secondary qualities which appear only in sense-perception, such as colour and the feeling of touch, and what is taken, on the other hand, to exist in itself in absolute and independent space and time, the supposed primary entities of geometry and physics. He will have nothing of the assumption on which such a division is based. His purpose is to take nature as it seems, and to ascertain by adequate analysis the kinds of entities and of relations between them which

are disclosed in our perception of nature. He does not seek to discover the whole of what nature discloses. Social, ethical, and æsthetic phenomena, for instance, are outside the physical science to which his method is confined, and so, to a large extent, is life itself, although certain aspects of biological character exhibit rhythmic relations on which he touches. He confines himself in the main to the phenomena of which physics must take account, and his method of treatment is to take nature in this aspect as "closed to mind," that is, as there independently of it. For reasons which will appear later on I do not think he succeeds in separating nature from mind. Indeed, he is careful to say that he commits himself to no metaphysical assumption on the point. His purpose is to proceed in the only way he takes to be legitimate for a mathematical physicist. But even in this he cannot wholly divest himself of a philosophical garment. For he has to declare that experience is "significant." For Berkeley significance meant that God was indicating to us a meaning, that of an ordered world, through a series of self-contained signs which our minds received and then interpreted. The signs, or ideas, had their own existence detachable from the significance. That was why his doctrine fell a prey to the scepticism of Hume. But Kant would have nothing to do with Berkeley's view. He declared that significance and experience were the same thing, and that they were therefore incapable of being detached even in theory from each other, as Hume had sought to do.

All this Professor Whitehead expounds with lucidity and freshness at an early stage in his *Principles*. He declares the nature of significance to be a fundamental question for the philosophy of natural knowledge. "To say that significance is experience is to affirm that perceptual knowledge is nothing else than an apprehension of the relatedness of things." We must not look round, he says, for a knowledge of things and then seek their relations, which in that case we shall not find. "Natural knowledge is a knowledge from within nature, a knowledge 'here' within nature and 'now' within nature, and is an awareness of the natural relations of one element in nature" (the "percipient event," or a bodily awareness of simultaneous relations of all nature to this awareness) "to the rest of nature." He seems here to accept the "internality"

of relations to their relata, in a way that is not consistent with the doctrine of those New Realists who treat the relata as entities separate from relations that are external to them and self-subsistent.

The fundamental characteristic of nature is the " passage " of its events. Nature is always moving, and sense-awareness is always seizing on the passing events as they extend over each other. For sense-awareness this extension is a present fact, the unity expressed in which we call simultaneity. It is what is discerned. Professor Whitehead names it a " duration." But this does not mean an abstract stretch of time. We have not yet got to time. It is just a section of nature as for awareness, limited by the apparent simultaneity of what it includes. It is not, however, a perfect simultaneity, or a moment. For, again, this would require the concept of time for its definition, and we have not yet reached this concept. It is what has been called the " specious present," which for a more delicate awareness might have smaller durations into which it was divided. Nature is thus a process to which each duration belongs. In this view of the fundamental character of nature being passage the author comes near to the view of Bergson, but he will not allow passage to be identified with time, even as much as Bergson does. Passage is rather the fundamental feature of nature from which both time and space are constructed by our abstractions. It is easy to see how he approaches to the space-time continuum on which Einstein, in agreement with Minkowski, lays so much stress. For the physical basis of this continuum is just the quality of passage in events. These, while they occur in a duration, extend over each other, so that we have a foundation on which we erect the conceptions of both time and space, thus themselves merely derivative in character.

But events merely as such could not be identified. They pass, and cannot be recognised. For recognition is awareness of sameness, and each event is by its nature essentially and wholly distinct from every other. What we recognise as continuing the same must therefore be something that does not pass. This Professor Whitehead calls an " object." It does not share in the passage of nature, and it is the result of an act of comparison. He says, however, that there can be a non-intellectual relation of sense-

awareness which connects the mind with a factor of nature without passage. Now there are clearly objects in nature as it presents itself to us. Otherwise experience would be devoid of significance, and there could be no knowledge and no science. How can this be? The answer he gives is that events have characters in accordance with which they shape themselves. The objects are ingredient in these characters, and make them what they are. It is in virtue of the ingression into events of objects that the events body forth permanences in virtue of which they can be compared. Nature as we find it is such that there can be no events and no objects without the ingression of objects into events.

Pausing at this sentence in Professor Whitehead's analysis, the metaphysician will hold up his hands. The portal of nature was to be bolted and barred against mind, but mind has apparently gone round the corner, got in by a back door, and taken possession of the building. "Events," "recognition," "objects"! Here we have knowledge with all its implications, and knowledge in which the "significance," which for Professor Whitehead is the reality of our experience of nature, consists. I am far from complaining. I am in agreement with the author. But I feel I have been led by him into territory which seems not new, but somewhat familiar to me. If we went a little further we might expect, and not without reason, to find that the boundary-line between mind and nature, and the entire distinction between them, fell within knowledge as having been established only by reflection.

But this does not detract from the interest of the method of treatment. It is searching as no other method of scientific treatment of the problem has been searching. The author is not afraid to say that objects in our knowledge of nature may be no more than logical abstractions. They may indeed be posited by sense-awareness itself, but even when they are not so posited they may belong to nature. He lays stress on the way in which educated language about space and time has been made to conform to the orthodox Newtonian view of these as absolute frameworks, with points as fixed entities in them. If there is no absolute but only relative position a point cannot be such an entity. "What is a point to one man in a balloon with his eyes fixed on an instrument is a track of points to an

observer on the earth who is watching the balloon through a telescope, and is another track of points to an observer in the sun who is watching the balloon through some instrument suited to such a being." [1] "If you admit the relativity of space, you also must admit that points are complex entities, logical constructs involving other entities and their relations." "When you once admit that the points are radically different entities for differing assumptions of rest, then the orthodox formulæ lose all their obviousness. They were only obvious because you were really thinking of something else. When discussing this topic you can only avoid paradox by taking refuge in the comfortable ark of no meaning." Events, says this mathematician, are named after the prominent objects situated in them, and thus, both in language and in thought, the event sinks behind the object, and becomes the mere play of its relations. The theory of space is thus converted into a theory of the relations of objects, instead of being a theory of the relations of events. But objects have not the passage of events. Accordingly space treated as a relation between objects is divorced from its connection with time. It is space at an instant without any determinate relations between the spaces at successive instants. It cannot really be one time-less space, because the relations between objects change. In other words, it is a conception of reflection gotten by an abstraction.

It will be convenient to see what result this acute critic of orthodox physical science reaches as his conclusion, before proceeding to his relation to the Einstein doctrine. At p. 167 of the *Concept of Nature* he sums up the contrast between what ought to be said and what is commonly said. I will give the passage in his own words :

"The concrete facts of nature are events exhibiting a certain structure in their mutual relations and certain characters of their own. The aim of science is to express the relations between their characters in terms of the mutual structural relations between the events thus characterised. The mutual structural relations between events are both spatial and temporal. If you think of them as merely spatial you are omitting the temporal element, and if you think of them as merely temporal you

[1] *Concept of Nature*, p. 135.

are omitting the spatial element. Thus when you think of space alone, or of time alone, you are dealing in abstractions, namely, you are leaving out an essential element in the life of nature as known to you in the experience of your senses. Furthermore, there are different ways of making these abstractions which we think of as space and as time; and under some circumstances we adopt one way and under other circumstances we adopt another way. Thus there is no paradox in holding that what we mean by space under one set of circumstances is not what we mean by space under another set of circumstances. And equally what we mean by time under one set of circumstances is not what we mean by time under another set of circumstances. By saying that space and time are abstractions, I do not mean that they do not express for us real facts about nature. What I mean is that there are no spatial facts or temporal facts apart from physical nature, namely that space and time are merely ways of expressing certain truths about the relations between events. Also that under different circumstances there are different sets of truths about the universe which are naturally presented to us as statements about space. In such a case what a being under the one set of circumstances means by space will be different from that meant by a being under the other set of circumstances. Accordingly, when we are comparing two observations made under different circumstances we have to ask, 'Do the two observers mean the same thing by space and the same thing by time?' The modern theory of relativity has arisen because certain perplexities as to the concordance of certain delicate observations, such as the motion of the earth through the ether, the perihelion of Mercury, and the positions of the stars in the neighbourhood of the sun, have been solved by reference to this purely relative significance of space and time."

The quotation I have just given indicates Professor Whitehead's attitude towards the view of the school of Einstein about space and time. With them relations in space and time are constructions by the mind of the observer, whose measurements are dependent on his system of reference. They are, as I have already pointed out, in a large measure merely subjective, and quite distinct from the relations in the space-time continuum which is the underlying fact in what we perceive. For Professor

Whitehead, on the other hand, space and time are objects which are no doubt constructed by what are in reality abstract methods, but they are based on the events in the passage of nature to which the continuum belongs. They stand for what is actually present to us, although observed indirectly and under differing circumstances, which may produce variations in the character of what is so observed. For him there is thus a single reality, while for the school of Einstein there are apparently two, one intuitional, or passively and directly apprehended, and the other conceptual. Space and time do actually exist in nature for the author of the *Concept of Nature*, but they have many varieties.

Whether or not Professor Whitehead is justified in his conclusions, he has at all events arrived at them by a method of a strict order. As I have said, he is one of the most prominent of the exponents of the modern school, which seeks the foundations of mathematics in logic and has produced new methods of investigation. One of these has been invented by Professor Whitehead himself, and it is by restricting himself, as far as possible, to what is in harmony with this method that he arrives at the results described in detail in his two books, results to the general character of which I have now referred. The method is that of " Extensive Abstraction." Its purpose in this connection is to express in terms of physical objects the various rôles of events as active conditions in the ingression of sense-objects into nature. It will be remembered that although objects are products of recognition of sameness, and so of abstract reflection in which they lose the quality of passage that is inherent in events, still they belong to nature as an essential part of its significance, and therefore as not merely subjective but as actual. Now this is not the less true, merely because they may be perceived as varying with the situation of the observer. In the progress of the investigation of nature there emerge scientific objects, which embody those aspects of the character of the situation of physical objects that are most permanent, and that are capable of expression without reference to a multiple relation including the percipient event of our bodily awareness. The relations to each other of scientific objects thus become characterised by a certain simplicity and uniformity, so that the characters

of observed physical objects can be expressed in terms of scientific objects. These are no mere formulas for calculation, because formulas must refer to things in nature, and scientific objects, for instance electrons, are the things in nature to which the formulas refer.

Take as an illustration time and space themselves. The determination of the meaning of nature is largely concerned with the characters of time and of space as objects. They are abstracted from events, and when we pursue their investigation we find that they are inseparable, and that their measurements involve each other, as in the modern theory of electro-magnetic relativity, brought to light by the researches of Clerk Maxwell and others. Looking at time as an object *per se*, it is the ordered succession of durationless instants, which are known to us merely as relata in the time series, the relation in which we know merely as the one-dimensional order in which instants follow each other. Thus the instant and the relation imply each other. Taken as self-subsistent this would give us time as an absolute system. But such bare time is to be found nowhere in nature. What we call time, and make our object in reflective perception, is derived from our awareness of the passage of events. It is this concrete and factual passage, and the cardinal fact that the events that pass are not isolated entities, but in our awareness of them extend over each other, that form the materials from which we construct our notions of time and space.

The method of extensive abstraction is Professor Whitehead's way of exhibiting this conclusion with the reasons for it. It is a method which in its sphere achieves the same object as does the differential calculus in the region of numerical calculation, for it converts a process of approximation into an instrument of exact thought. At the same time he claims that it is merely the systematisation of the instinctive procedure of our habitual tendency in practical life to seek simplicity in relations between events by excluding all but what is small and simple enough to be definitely formulated. The principle of extensive abstraction gives rules by which this is to be achieved, and its results can be indefinitely prolonged. Thus we get at a precise " route of approximation," and we arrive by it at results of reflection, such as " event-particles," points in instantaneous space, and moments of

time in each of which all nature is instantaneously there, with the volume incident to such moments. Elements such as these form the exactly determined concepts on which the fabric of science rests.

An illustration which the author gives may be useful as indicating the way in which the approach to simplicity is made by convergence of the infinite series formed by an abstractive set towards the limiting character of the natural relation sought after. This last is what is called its intrinsic character, while the properties belonging to the relation of whole and part between its members are called its extrinsic character. These properties guide us to the intrinsic character, which emerges from the convergence and is its limit. "We see a train approaching during a minute. The event which is the life of nature during the minute is of great complexity, and the expression of its relations and of the ingredients of its character baffles us. If we take one second of that minute, the more limited event which is thus obtained is simpler in respect to its ingredients, and shorter and shorter times such as a tenth of that second, or a hundredth or a thousandth—so long as we have a definite rule giving a definite succession of diminishing events—give events whose ingredient characters converge to the ideal simplicity of the character of the train at a definite instant. Furthermore, there are different types of such convergence to simplicity. For example, we can converge as above to the limiting character expressing nature at an instant within the whole volume of the train at that instant, or to nature at an instant within some portion of that volume—for example within the boiler of the engine—or to nature at an instant on some area of surface, or to nature at an instant on some line within the train, or to nature at an instant at some point of the train. In the last case the simple limiting characters arrived at will be expressed as densities, specific gravities, and types of material. Furthermore, we need not necessarily converge to an abstraction which involves nature at an instant. We may converge to the physical ingredients of a certain point-track throughout the whole minute. Accordingly there are different types of extrinsic character of convergence which lead to the approximation to different types of intrinsic character as limits." [1]

[1] *Concept of Nature*, p. 82.

What has been said may suffice to give some indication of the method which Professor Whitehead applies in his investigation. The application of it to his problems requires for its explanation logical and mathematical technicalities on which it would be out of place to enter here, and for these I must accordingly refer the reader to the two books. What I can do is to add to what has been said about the instrument a little about the results its author reaches with it.

The space-time continuum, which underlies our perceptual experiences of space and time as popularly conceived, is itself no doubt an object constructed by recognition. However much, therefore, it is foundational it is "conceptual." In saying so I am alleging nothing against the factual character which has been given to it by both Professor Whitehead and Einstein. For our experience is always "significant," and this conception may well be essential in that significance.

But if the space-time continuum is real, notwithstanding its conceptual character, can the same be said for instants or moments in time and bare points in space? Professor Whitehead would certainly reply in the affirmative. For him these cannot be less than "scientific objects" required for the interpretation of nature, and they therefore form part of its significance and so of its reality. They give us reality, but in forms fashioned by interpretation. They are not "events," but they are objects which enter into the character which events assume in our experience. Hence they may be of the greatest importance for science, and must be closely defined. This he seeks to do. Consider position in space at an instant. All nature must be treated as bounded by that instant. Under the method of abstraction its instantaneous space becomes the assemblage of abstractive elements covered by the instant. How do these get position? By the intersection, brought about by reflection, of two moments, the locus of which intersection is the assemblage of abstractive elements covered by both of them. Two moments which are successive and so mutually exclusive cannot be thought of as intersecting, and therefore the abstractive elements they cover are not conceived as doing so. Corresponding lines in them consequently neither do nor can intersect. Along this path we get to parallelism. If the moments are not successive, but

belong to different and independent temporal series, their contents may intersect. That is to say, there may be a common assemblage of abstractive elements, which we recognise as of an overlapping character, although belonging to more moments than one. The application of the method to the railway train in the passage just quoted shows how this may be so. Such an intersection of geometrical elements in the space of one instant by geometrical elements of the space of another instant gives rise to planes, lines, and points. Speaking generally, position is the quality which an abstractive element possesses in virtue of the intersecting moments in which it lies. When he is dealing with these elements as strictly confined to instantaneous space, Professor Whitehead reserves for them the expressions " levels," " rects," and " puncts." It was bad enough for Einstein to have compelled the physicists to think of the space-time continuum, and of the relations of its point-events or event-particles, in " Tensors," the result of a calculus so refined that it can express the intervals between them in terms of functions of variables that are independent of any particular form in space and time. When Einstein did this he chastised the physicists with whips, but Whitehead has chastised the mathematicians with scorpions. They have now, as the outcome of his logic, to think of space relations as divested of all covering for their nakedness from succession. " What," the plain man will exclaim, " is an instant of time that stands in no relation to any succeeding instant, and what is an assemblage of points so isolated that you are not allowed to compare them by looking successively from one to the other ? " He begins to think gently of those who once asked him whether there was any difference between mere being in general and mere not-being in general. He took them to be preposterously asserting that to have half a crown was as good as not to have it. But he comes to believe that those to whom he attributed such an enormity may quite unduly have been made scapegoats, when he looks on the outrage against current ideas now indulged in by the new logicians of modern mathematics and physics.

The truth, however, is that the plain man is wrong. If he will abstain from easy-going speculation about articles which pertain to the ultimate character of reality he will be troubled by none of these apparitions, and will escape

from his fear of intellectual and spiritual bankruptcy. With the mathematicians and physicists it is otherwise. Their sciences cannot stand still. Bold leaders, like Einstein and Whitehead, are beckoning them forward, from ground which is treacherous into territory which may or may not prove secure. It is true that in the new region they will find themselves fraternising, first with logicians and then with metaphysicians. It cannot be helped. Knowledge is a whole, and those who pursue it are not only fellow-men but brothers in its pursuit.

These new ideas are not so remote from ordinary experience as they seem. The actual realities to which they relate turn on the degrees to which reflection can be carried. My dog reflects, but only up to a point beyond which he fashions no concepts to carry him. He knows nothing, so far as I can see, of parallelism or even of space as differentiated definitely from time. But he is aware of the continuity of events, and he even estimates its flow by coincidences, the feeling in his stomach, for example, of hunger which heralds his supper-time. Place of satisfaction, too, he associates by an analogous coincidence in his experiences with the kitchen door. He is thus aware of something resembling in character what Minkowski called the "world-line," a continuous flow in which events become distinguished, even in the absence of measurement. But geometrical relations exist, not for him, but only for those who can reflect at the level they require.

So far Professor Whitehead has shown the way to a plurality of space and time systems. These contain objects based on events of which the observer is aware, and which in full perception he discriminates into objects and relations based on them. The objects are in this sense things, and not mere thoughts. But with the intrusion of the recognition that is required, the objects are recognised as related to perception; to what he speaks of as the percipient event, and as coming within the duration of its awareness. They are thus perceived with variations depending on the circumstances in which observation takes place. It is so that space and time systems arise, and, as their genesis is from relations between objects, the systems may vary and the space and time be relative in form and in measurement. The "distances" between event-particles, what Einstein calls

"point-events," may be the foundation, according to differences in the positions of observers, of a space the co-ordinates of which are curvilinear and not straight, or of a time the units of which imply differing measurements in alternative time systems.

But how are the time systems of different observers, or of the same observer under different conditions, co-ordinated? Co-ordinated they undoubtedly must be to some extent, for our common experience is of nature as an entirety. This is one of the most interesting questions discussed in the two books, and the solution is highly significant. If the question were put to a metaphysician he might have little difficulty in answering it. He might reply that thought does not exist in separation from the series of objects presented in space and time, save in so far as it is described in a distorted form from standpoints, such as those at times adopted by the psychologist, which give only a relatively true account of it. He would go on to say that in such cases the relativity arose from the assumption of a view which could be justifiably adopted only for a special and limited purpose. He would then point out, what we shall have to discuss in detail at a later stage, that the character of our thinking implies the recognition of actual identity in difference. Observers might thus be recognising a nature of which their conceptual knowledge was identical in its respective differences, so that we all of us behold the sun, moon, and stars as identically the same objects, despite differences due to our positions. As the distinction between the concept and its object falls within knowledge, and has no meaning apart from or outside it, he would not be troubled by the problem of how thoughts and things were to be brought into one in the significance of experience.

But it would have been difficult for Professor Whitehead to take such a line in his discussion. He does not pronounce against this kind of objective idealism, which is a development of that Kantian interpretation of significance as implied in experience on which he looks with some favour. But he has set to himself the task of endeavouring to explain nature on the provisional footing that it is closed to mind. He is accordingly as consistent as he can be, and he is a thinker with but few illusions as to the difficulties he finds in being so. His standpoint indeed

implies that mind is in the main something that looks on nature as outside it. Even his " percipient event " has a biological appearance. It is a natural further step to look on the concepts of thought as distinct from the reality about which they are concepts. Thought itself may place them in this relation quite justly for special purposes of its own. It often does so. But when it does so it is in virtue of distinctions that are its own creatures. From another standpoint, at which no such distinction is treated as final, the universals of thought are present in the particular object, which gets its reality only through them, and at the same time is what gives these universals reality. This seems to be the real explanation of how significance and experience can mean the same thing. The form is of the character to which metaphysicians have given the name of the " concrete universal," the individuality that is as much general as it is particular, and in which these two phases if distinguishable are so only in reflection, and not as separate entities in the real about which we reflect. Such concrete universals are intelligible only if mind and its object belong to one entirety, and are in final analysis inseverable.

Now the necessity of recognising some such principle as this, characterising reality, comes to light in Professor Whitehead's explanation of Congruence. If there are alternative space and time systems, how do we compare them? Not merely by measurement, for this, as a matter of fact, presupposes congruence. A yard measured in one such system may have a different significance from a yard measured in another. If we are to compare we must be certain that the unit signified is identical in the two systems. Einstein has made this very clear, as we shall see later on, and so have the discrepancies from Newtonian calculations which astronomy has revealed, and the new ideas involved in the solution of the question as to why the velocity of light always appears constant.

Now we have seen how Professor Whitehead has succeeded in clearing the ground to a certain extent. He has found an explanation of how points and lines and planes which are constructions of reflection that come to us, not in bare sensation, but through recognition, arise out of the inseparability of space from time, so that all space-time systems in which these emerge present conceptual objects

so far identical in structure. The possibility of measurement remains still to be explained, although coincidence in position has up to a certain point been accounted for in terms that apply to all such systems equally. Motion presupposes rest for its significance. Now rest depends on position. It does not follow from acceptance of the principle of relativity that there is no position which is in any sense at all absolute. There is in the case of each time system a meaning in which we can attribute something resembling an absolute position. The series of instantaneous spaces in the moments of a temporal series, which we reach by abstraction from events, and regard as parallel because such moments are successive and so independent as regards each other, may define positions as being absolute within the systems which belong to that time series. Such positions may be those of event-particles in successive spaces, so correlated in their respective sets that each possesses the same position in a series of spaces. " Such a set of event-particles will form a point in the timeless space of that time system. Thus a point is really an absolute position in the timeless space of a given time system." Still, there are alternative time systems, and each must therefore have its own definition of absolute position. If we take one of these time systems and consider it as possessing various instantaneous spaces, we find that motion, which is an observed fact, is meaningless if we think of it as confined to a single instantaneous space. It expresses the comparison between position in one instantaneous space with positions in other instantaneous spaces of the same time system. Rest, like motion, is an observed fact. The percipient event is " here " and its duration is " now." The relation of the percipient event to its duration is what Professor Whitehead names " cogredience." It gives the sense of rest and helps the integration of the duration into a prolonged present. The preservation of this peculiar relation to a duration is a necessary condition for the function of that duration as a present duration for sense-awareness. Cogredience is the preservation of an unbroken quality of standpoint within the duration. It is the continuance of identity of station within the whole of nature which has its terminus in our sense-awareness. Thus perception is always " here," and a duration can only be posited as

present for sense-awareness on condition that it affords one unbroken meaning of " here " in its relation to the percipient event. It is only in the past that you can have been " there " with a standpoint distinct from your present " here." The percipient event determines the time system immediately present in nature. As the percipient mind in its passage correlates itself with the passage of the percipient event into another percipient event, the time system correlated with the percipience of that mind will change.

Professor Whitehead deduces from these principles the meaning of perpendicularity in space. It arises from the intersection of the moments of different time systems possessing their respective instantaneous spaces. The directions will be different, and the levels in the two spaces will therefore intersect. The symmetry of perpendicularity is a particular case of the symmetry of the mutual relations between the two time systems. It stands for a unique and definite property in nature. But still cogredience has not as yet brought us as far as congruence, and an adequate explanation of congruence is essential if comparison and measurement in space and time are to be rendered intelligible. Cogredience explains perpendicularity, and, when taken in conjunction with the reciprocal symmetry between the relations of any two time systems, congruence results from the conjunction. The constructions of science are merely expositions of the characters of things perceived. To understand the nature of congruence we turn to what we have already found in the fact of motion. Motion expresses a possible connection between spatial and temporal congruence. An event-particle, to take an elemental case, has its position defined by the aggregate of moments (no two of the same family) in which it lies. It receives its position in the space of one moment in virtue of intersections from the whole aggregate of other moments in which it also lies. The differentiation of the space of the first moment into a geometry comparable with those of the other instantaneous points occupied by the event-particle expresses the intersections with the spaces of the other time systems. In this way planes and straight lines and points find their meaning, and are capable of comparison through recognition. On the other hand, parallelism and correspondence arise from the

parallelism of the non-intersecting successive moments of the same time system with the abstractively reached contents of the first moment. Similarly, the order of parallel planes and of event-particles on straight lines arises from the time-order of intersecting moments. These are the sources from which geometry derives its physical explanation. If Professor Whitehead is right, he has given an answer to a question put by Riemann long ago to which I shall refer in a later chapter.

The qualities which all space and time systems must exhibit in common, however different may be the results, due to the position of the observer, of measurements made in them are thus the basis of congruence according to the doctrine explained in the two volumes. It is this identity in the principles of the fundamental structure of these systems that enables the measurements made in them to be compared, and that is the basis of their congruence. Students of the mathematical theory of relativity in its earlier or " special " form will be reminded of the way in which Einstein applies the Lorentzian formula for transformation. The spatial and temporal co-ordinates of a system in motion in a straight line towards a source of light are rendered by this formula comparable with the co-ordinates of another system which is treated as at rest. The illustration is a merely particular case falling under a much wider principle, and it is an easy case to follow because the equations compared have a common constant of a very simple kind, that of the velocity of light. But a broader principle is required on which measurement in one space-time system can be translated into the terms of measurement in another different from it, if we are to find the foundation on which is built up the system applied in a complicated fashion in the transformations used in the general theory of relativity, and this principle appears to be just that with which Professor Whitehead is here dealing.

I feel that in the brief references to his work now made, I have not done more than offer an indication of Professor Whitehead's elaborate and searching analysis of congruence, and I must refer the reader who desires to explore it further to his two books, with the hope that in what I have written I have not done much injustice to the character of his exposition.

What I am concerned, however, to add is that, gallant

as is his attempt, the author of the *Concept of Nature* can hardly claim to have successfully excluded nature from the imputation of the ingression of mind into its constitution. Congruence, for example, like much else in his system, is the creature of the recognition of objects, and such recognition appears to me to be meaningless excepting as itself the pure creature of mind. In a later chapter I shall have to come to grips with the New Realists over this point. It is not necessary to go so far as a distinguished writer on relativity, Professor Eddington, seems to do in order to make good the point that mind and the object-world, as interpreted by the doctrine of relativity, are inseparable. The facts to which he draws attention in this connection are remarkable, but they do not appear to imply of necessity the principle of representative perception which I think he imports into them.

Professor Whitehead, abjuring metaphysics, has sought to keep on the other side of the line. I doubt whether he has succeeded. But he has at least accomplished this. He has shown that philosophy cannot hope to make progress without taking full account of such an analysis of the object-world of reality as only scientific methods like his can make possible. His logical investigation is an entirely fresh one, and, whatever the light which it has cast on the ultimate character of reality, it has at all events opened up a new region with which the inquirers of the future will have to make themselves familiar. Only one equipped as is Professor Whitehead with both mathematical and logical science of the highest order could have explored hitherto unfamiliar ground with the originality and the thoroughness which he has shown to us.

CHAPTER V

EINSTEIN

I NOW turn to the doctrine of relativity in measurement in the form given to it by the school of Einstein. My endeavour will be to bring out the connection of the doctrine in this shape with the wider meaning of the principle which lies beyond mathematical and physical science. In the first place it is necessary to enter on some explanation of this doctrine as applied by Einstein to the forms of space and time.

Long before 1905 it had been found by experiment that the velocity of light appeared to be always 186,330 miles per second, whether the passage of its rays was towards us while we were at rest with regard to its source or whether we were ourselves moving towards that source. In the latter case the true velocity of approach between the observer and the rays must, according to logic, have been really greater than in the first case, for just the same reason that the combined velocity of two trains coming towards each other is greater than that of either singly. But the combined velocities in the instance of light appeared after most careful observation not to conform to this calculation, and in consequence certain physicists, assuming the æther to be an actual and independently existing substance in which the waves of light travelled, had resorted for an explanation to the idea that all bodies which were in motion towards the source of the waves in the æther underwent, from some action on them of that æther, a contraction in length in the direction of their motion. This would have accounted for the apparent constancy in the velocity of light, for the contraction would have extended not only to the other elements in the moving system of the observer, but to the rods and clocks by which space and time were measured from this system. These would have measured in contracted

units. However, the supposition was unsatisfactory in that there was no vestige of direct evidence to support the hypothesis of such a contraction.

In 1905 Einstein introduced a wholly different explanation of the fact that the velocity of light appeared to be the same, whether the observer was at rest or was moving with a velocity of his own towards the source of the rays. His explanation was that the system of measurement was demonstrably relative to the motion or rest of the observer, and that this relativity had been overlooked. He pointed out the assumption, tacitly made, that the æther was an independent physical substance, the standards of relations in which therefore never varied, and declared that such an assumption was unwarranted. No system of measurement and no employment of co-ordinates as necessarily of an absolute and unvarying meaning could legitimately be based on it. For when we observe motion we observe in reality only the relations of things as altering their positions in reference to each other—that of our own situation, for example, to a source of light. If, he said, we bear this fact in mind the consequence is clear. The basis of measurement and the appearance of reality depending on it, and therefore the outcome, and the significance of the units employed, must vary with any change in situation of the observer. To look at a body moving on the face of our earth is a simple matter. For ordinary practical purposes our changes of position on the earth are not of a velocity great enough appreciably to affect measurement, and its basis does not materially vary in observation of objects on the earth. But suppose that, instead of observing objects on the earth, we are observing a distant star as a source of light. In this case the observer may be moving with great velocity relatively to the star.

To understand Einstein's principle as it applies in such a case, it is necessary to get out of our heads the persistent assumption that when we look out on the universe of space and time we are looking at something which is self-subsistent. For him spatial and temporal relations in that universe depend on the situations and conditions of observers. The character of space and time is therefore purely relative, and so is their *reality*.

If one observer is approaching the object observed with a great velocity, while in regard to that object the other

observer is at rest, then, if Einstein be right, what is experienced in his observation by the first observer will be actually different from what is experienced in his observation by the second. For, in order that the velocity of light should have remained the same for both, the units defining what is observed, as employed by them respectively, must have been different. What gives rise to the difference is that, as we saw in the preceding chapter, space and time do not exist separately from each other, excepting so far as we abstract and separate them notionally in measuring change or movement. This we do by employing for the purpose of such measurement co-ordinates or axes of reference which must be applicable as regards both space and time. Now our observers are in motion relatively to each other. This logically involves that, as each obtains the same result in his measurement of the velocity of light, the co-ordinates with reference to which they have resolved the union of space and time have been different. The proportions between the co-ordinates used by the observers in each case may be expressed mathematically in sets of equations. In each case the unit of the combination of space with time is apparently the same, but not the less, on resolution into derivative aspects, these aspects are found to exist in different proportions. This explains why, notwithstanding the relative rest and motion of two observers, the motion of one of them having to be added on in estimating the relative speed of the approaching rays, the velocity of light remains the same for both.

At the risk of repetition it may be well to state more fully why, according to what is called the special or restricted principle of relativity as originally formulated by Einstein, the velocity of light comes out as a constant, or is the same for all persons observing its approach irrespective of whether they are in motion or stationary, provided that in the case of a moving observer his rate of motion does not vary and his course is a straight one.

That this ought not to be so is suggested by the analogy of two railway trains approaching each other. For the velocity of each train must be added in if we are to find the actual rate of approach. It seems accordingly that the velocity of an observer moving towards a distant source of light must similarly appear in the result of calcu-

lation. But the analogy of the trains is in reality only of limited application. In our every-day life on the earth we may justifiably for practical purposes assume that we are all relatively at rest when we observe, and that the conditions under which we measure are therefore always the same. This assumption is, however, wholly unjustifiable when we are observing a star, for we may in fact be moving either towards or from it with great rapidity, and we cannot take the observer to be otherwise situated than in a system which is changing its position relatively to the star at a high speed. The conditions under which such an observer measures are therefore quite different from those assumed for practical purposes to obtain in the case of the observer of the trains. His motion and continuous alteration of relative situation make all the difference in the principle which gives meaning to measurements that have to adjust themselves to changing standards.

To see the logical consequences of this we must retrace the steps which the analogy of the train made us take, and ask ourselves whether it was safe in our astronomical observation to assume that space and time, with units calculated in them such as miles and seconds, can have a reality which is not dependent on some fashioning in the process of observation which may have caused their reality to vary in its character. Are there in truth any relations in space and time between objects which ought to be looked on as furnishing the foundation of absolute measures and shapes ? Are there any such measures and shapes which can be taken to be under all conditions primary and fundamental, as Newton assumed ? Or are these all relative to the situation and conditions of the observer ?

It may be that before we reach the forms and measurements in which objects appear to us we have started from some basic fact which is independent of them and on which we have built them up by interpretation. It is possible that relations in space and time are merely the outcome of intellectual construction ; in other words are relations in which the observer in his effort after discovery has to *set* this basic fact in its reference to himself, so that both the significance and the reality of the relations depend on such reference to the observer, and have to vary according as he observes from a system which is in motion of some kind or from one which is at rest. He may have fashioned his

measurements differently according to the co-ordinates or standards of reference which he has had to employ in making them.

Now it is far from clear that Newton was justified in assuming an absolute character in motion as something which we apprehend directly. If I step across a railway compartment I may be moving relatively to the train at only a very minute fraction of a mile in a minute. But individually I may be moving for an observer on the platform of the station the train is passing at sixty miles an hour plus this small fraction. The relativity in standard does not, moreover, end there. For the combined velocities of the train and myself have to be added to the great velocity (possibly over eighteen miles a second) with which the earth and the train on it are passing relatively to positions in the sun. Again, the solar system may itself be moving in the firmament, and so on *ad infinitum*. The velocity can never in short be expressed as an absolute one, or otherwise than as relative to some system apart, which again is presumably itself in movement relatively to some yet other systems beyond. We are not justified in the assumption that there is any self-contained or absolute velocity in nature to measure. Why, then, should the units in which we render for ourselves either the velocity of the trains or that of light have been taken as meaning what they did otherwise than merely relatively to the situation of the observer and its rest or motion ? Nothing further appears to have been really imported in the miles and seconds in which the velocity is estimated under conditions which differ or in the reality we attribute to them. My rate of transit in crossing the railway carriage was expressed in terms which were only final in the train, and the earth and the sun in addition were assumed to be at rest. It is plain that scientifically this assumption ought not to have been treated as being absolutely true. The same thing occurs when I approach the source of the ray of light coming towards me. The significance of the directly apprehended fact, which is the change in position relative to myself, and is called velocity, has to be estimated, and this I do by finding analytically how space and time, miles and seconds, are related in it. That is how velocities are really measured and compared. They are always calculated in terms of the particular co-ordinates employed and are relative to

these. For observers who are all in the same state of rest or motion the results will be uniform, for the co-ordinates will have been the same. But if the position of the observer is a changing one the velocity, which is measured only relative to his position, changes also as he measures it. Our direct and primary experience is simply the bare fact of the change in position itself, that of the ray with a movement relatively to ourselves increased by our own velocity if we are going towards the distant star. This bare fact of observation does not by itself present miles and seconds as units in which we express it. We have to estimate the significance of the immediate presentation of the changing position of the light waves as they advance towards us and we towards them. This we do by estimating relatively to the standards of reference we adopt as our co-ordinates, representing hypothetically assumed lines we select as appropriate, in terms of which we measure the results of our observation. One of these co-ordinates is chosen so as to yield us a measurement of length, another gives a spatialised representation of the duration occupied. The proportion in which the measurements which result from their use appears, when we estimate velocity by relating space to time, both thus represented, gives us our measure of the velocity. Now if the different observers are themselves changing position relatively to each other the results obtained in this way must vary proportionately. These results are analysed in terms of co-ordinates which themselves vary with changes in the situation of the observer in reference to what he observes, importing it may be more length traversed in the second, or the same length in a second that really comes out shorter. What the observers have taken their respective measuring-rods and stop-watches to indicate, however these may resemble, will thus be facts with different meanings. The units of velocity will have been got at in the same way, but they will in point of fact be different in their significance and therefore in the character of their reality, for the space and time relations thus reached by abstraction and inference will have been constructed in the process of observation and combined in varying proportions. As there is no absolute space or time, but the relations which give measurement and meaning to both are always relative to changing standards, the apparent velocity will remain a

constant, an unvarying fact apparently basic in our awareness, but it will really have been differently estimated in the measurements we make. It is therefore clear that to get at the truth we ought to have taken first, not the idea of measurement in space or time assumed to exist independently of us, for these consist in relations which are merely derivative and dependent for their reality as well as our observations of them on how the observer has resolved the antecedent and original fact of the changing position of the light ray relatively to himself, but the actually primary fact of his awareness of the change in a mere manifold or continuum before it was in any way measured.

It appears mathematically, when we write out the proper equations, that the variation in the results of the measurement thus obtained takes place automatically as the outcome of the special principle of relativity. The result in the familiar nominal units called miles and seconds is always the same, but it has been necessarily made the same by the application at the starting-point of standards or coordinates of measurement which altered proportionately as the relative situation and conditions of the observer varied. Our measurement has therefore changed proportionately not only the significance of these units but their reality for us, and the constancy of the velocity of light is disclosed not as an antecedent to the process but as a consequence of the character of that process.

The mathematical equations which express the process itself, together with the methods of adjustment so that the meanings of the results may be reduced to a common standard, are called the Lorentzian equations of transformation. The curious will find these equations stated and explained in a way that may now be more readily intelligible to anyone who will take a little trouble, in Section XI and the First Appendix in the English translation of Einstein's book on the *Theory of Relativity*.

The basis of our measurement is thus an ever-changing one. And when we measure the distances relative to our earth as moving, our clocks and measuring-rods, although they may be so constructed as to appear to register in terms outwardly the same, do not record in these terms the same actual result. For space, and time also for that matter, are not fixed entities, but signify only relations between objects. There is no justification for the assumption of absolute

motion or absolute rest. Length and the correspondence which we call simultaneity, meaning thereby that the times recorded as those of the happening of two events at two positions are recorded as identical, turn out to be relative conceptions, depending on the real situations of our standards of measurement. Two events which appear to be of equal duration according to measurement within one system may occupy different times when measured within another system. Thus, space and time being really interdependent, the hypothesis of a contraction in the measuring rods and clocks is superseded as quite unnecessary. That which appears is merely the result of the relativity of our method of measuring lengths and times. Even coincidence, in the form of simultaneity or correspondence as ascertained in measurement of time by clocks, may be only apparent. For its appearance in the end depends on what may be measurements in different space-time systems, that is on the spatial standards of reference afforded by the dials of the particular clocks, and these may imply what are really different units. Space systems and time systems thus alike depend for the standards that make them on the situation of the observer relatively to what he observes, and on whether he is at rest or moving. Two systems at a distance from each other, moving in different directions and with different velocities, may, for observers in them of a common object, be productive of results signifying different truths, in the form of shapes and measurements of space and time as actually and correctly observed. Of course the observers are assumed to be observing separately and in self-contained systems, without any reference to each other. Even on the earth we find illustrations of this kind of relativity. From the railway line a train appears to be moving; from the train the line appears to be so. The presentation of what happens from a system of reference moving with the train is different from that yielded by a system of reference on the line. What tells us that in this case the only reliable observation must be observation from the line itself, is that the picture framed from the train will not fit into the context of either the general experience of our fellow-men on the earth or our own usual experience. It is this discrepancy from our conventional standards, and not any absolute perception of space and time as subsisting

by themselves, that shows us that our passing system of reference is in such an instance unsuitable for getting at the way in which things will present themselves under conditions more in harmony with our lives than those of an obviously transitory experience. But in other cases, such as that of an observer on Mars, no such context of general experience may exist, and in such cases the estimate under one set of conditions of reference has to be accepted as giving truth and reality not less actual than what is yielded by observation from a different system.

To illustrate this more plainly I will take an instance where there is no reason for preferring one set of co-ordinates of reference to a rival system. I adapt the substance of this illustration from Professor Eddington's brilliant book on *Space, Time and Gravitation.* Big Ben strikes one and, an hour later, two. For me, sitting hard by in Queen Anne's Gate, the strokes appear to occur at the same place, and to be separated by an hour. This agrees, too, with what my own watch says. But an observer situated on the sun would consider that the strokes had occurred at different situations in space of Big Ben, for he would have seen that the earth had moved in the hour about 70,000 miles along its orbital track with respect to the sun, from which he was observing. In resolving the result of his observation into the space component of the position, he thus resolves it with a different result from mine, for whom, Big Ben being at rest for me, the space change is *nil.* If he resolves the space by a different standard of reference, he has also to resolve the time component differently, for space and time, as we have seen, involve each other. The watch of the observer on the sun may be constructed on the same principles as my own, but the measurement of time by the units marked on the watch on the sun, though apparently analogous, will have a different meaning. Its apparent agreement with mine will not be real, for the spaces on its dial, to which reference has to be made for measurement in looking for the simultaneities belonging to correspondence in time as indicated on the dial spaces, will not be in reality corresponding spaces, the measurement being made on a different basis of reference. There will thus be two different local time systems, just as there are two different local space systems, and the observer in

each will measure with reference only to the co-ordinates of his own system.

That the time measurements of the observer on the sun should vary with his space-system is not surprising. For apart from the view of time and space as differently fashioned abstractions from a time-space continuum in which they have grown from a common root, and also apart from other difficulties, mathematical and physical, in the process of their dissociation, there is a more general way of expressing the reason. Those who have studied Bergson will remember his principle that the time we observe is always spatialised time, and has a distinctive character as such for the observer who seeks to make it an object of scientific experience. It is this spatialisation of time that gives to coincidence and correspondence in time their measurements. We measure time by treating it as in relation to space, and it is only in terms of space that we can measure it. With pure duration measurement has, in Bergson's exposition, nothing whatever to do. The measurement of calculated time must therefore vary with the character of each particular space system.

Thus the position of the observer and what he observes turn out to imply each indissolubly, and the theory of relativity, even in the limited form in which Einstein introduced it in 1905, does away with the traditional conception of unaltering relations in space and time which was accepted by Newton, and banishes the notion of the æther as a self-subsisting substance with a unique set of co-ordinates to which all general laws are finally referable. No such unique or final system, if its implications are thought out, is either reconcilable with the apparently constant character of the velocity of light, or is on Einstein's principle possible.

On the principles laid down by Newton the co-ordinates by reference to which observers with different situations and movements estimate could not have been really equivalent. That the velocity of light should appear to be under all circumstances the same for all systems, whether they moved or were at rest towards the source of its rays, was the demonstration of this. That velocity could not truly be the same if the velocity were absolute in an independent space and time. But, if its estimation depended on measurements made in space and time systems

which varied in the significance of their units with the position and movement of the observer, then the constancy of the measured velocity of light would be the outcome of the self-adjusting nature of the standards by reference to which it was measured. On this footing light signals could not any longer be regarded as depending for their coincidences merely on the condition of an independently existing substance in which they were propagated, because such a substance would in that case be at rest for all systems, and the facts would consequently be inexplicable. In the same way the electro-magnetic field, which extends indefinitely into space, could, as a consequence of what research and experiment had disclosed, be no independent "carrier."

Ten years later, in 1915, Einstein made known to the world that more general theory of relativity which is now associated with his name. His first view was not thrown over, but had become a special case of a wider principle which claimed to get rid of much that had perplexed observers. The first theory had indeed obviated the resort to the notion of a physical contraction in our measuring instruments. The apparent contraction was no longer taken to be a physical shortening of the instrument. It had been shown to be the natural consequence of the complete relativity of measurement, and to be the outcome of changes in the position of the observer with his co-ordinates or standards. But the scope of the doctrine of 1905 had been restricted to what was found by comparing movements rectilinear in direction and constant in proportional velocity. If the systems compared do not move in this fashion account must be taken of further phenomena. This is a consequence of the full principle of relativity, as developing the original principle of 1905, with the complete treatment of space and time as merely varying relations generalised from the positions and movements of objects.

These considerations led Einstein to insist in 1915 on the broad principle that the motion of all bodies is nothing more than their apparent change in situation relatively to one another. The objects which constitute our universe will present appearances which differ in every case according to the situation and kind of motion of the observers with their measuring systems. These appearances are the

actual reality. Absolute position, shape, and measurement are all unmeaning. Space and time disappear as self-subsistent, and in their place we get a plurality of relative systems.

We now come to a fresh outlook made possible by the general principle of relativity. We have seen how the notion of force had lost meaning for modern physicists. But there was one kind of motion which was apparently explicable only as the manifestation of something in the nature of actual pull. In gravitation we seem to observe a case in which bodies genuinely attract each other. What is called inertia, the fact that a body remains at rest or else goes on in the path in which it is moving in continuation of its actual motion, does not imply this sort of explanation. But there is a feature, and a very important one, which gravitational and inertial force exhibit in common ; they vary with the mass of the body that moves. The two so-called forces are so far analogous, and if the general principle is applied that all that is observed in motion is change of position, they seem as if they must be, so far as measurement is concerned, indistinguishable. The observed acceleration of any body left to itself may, in the light of this, be regarded as due either to gravitation or to inertia. It is a mere question of interpretation, under which it is open to us either to think of the event as taking place in a field where a genuine force called gravitation is operating, or, if we cannot attach any definite meaning to such a force, to think of the system of reference from which we are observing as being in fact itself in an accelerated motion equivalent to that of the body observed and imagined to be moving under the influence of gravitation.[1] On this footing there will be produced exactly the same appearance for the observer. The phenomena will seem to obey the same law in the same way, whichever alternative we adopt. We really perceive no force, but only relative change in position. This result is in effect what Einstein has named the principle of equivalence.

The physicist observes relative changes in the positions of objects and no more. These changes link for us the objects changing so uniformly that we talk of them as acting on each other. But whenever we talk so we come upon a fresh difficulty. How is action at a distance to be

[1] See p. 56, *ante*.

made intelligible? At a different standpoint, that from which we observe the living organism, where what is manifest is self-control and behaviour under the continuous guidance by an end inherent in the object and no external cause of its activity, the perplexity does not arise. An end is operative as just the self-conduct of the living organism. But whenever we are in the region of the externality of cause to effect the difficulty is unavoidable. There the form of causation *ab extra* must be assumed, and how can such a cause operate at a distance! The school of physicists of whom I am speaking claim to satisfy all that is required of them by showing that the so-called gravitational and inertial forces are the expressions of a single fundamental principle, based wholly on what is observed as change in position, in accordance with the principles of relativity and equivalence. They do not enter into any metempirical question as to whether we can go behind the simple fact of the behaviour towards each other of the bodies that conform to the laws of relative motion. They claim that the problem of how action at a distance under a gravitational pull is possible does not arise so far as they are concerned, and is one that is superseded for physics. The principle of explanation is equally applicable, whether the bodies are planets at enormous distances from each other in a solar system, or are vanishing points separated from each other by distances that are indefinitely diminishable. Here Einstein comes face to face with a further problem. He is in search of physical laws which will be true for every description of space-time system. The terms in the fundamental equations in which such physical laws can be expressed, if space and time may assume any form and may be non-Euclidean, must prove capable of application, whatever substitutions of variable co-ordinates are made in them. They ought, therefore, so far as they refer to space and time, to provide for their complete relativity, so as to exclude from them "the last vestige of physical objectivity." He works out, accordingly, a method of treating the world which appears to observation, as if capable of analysis into motion expressed as that of a particle through ultimate point-events or world-points, separated only by indefinitely vanishing distances. These distances, which give him line elements in what Hermann Minkowski called a "world-line," are

not what we should call relations in space or time, for they depend on a combination of the ultimate characters of both spatial and temporal quantity. That is because the world as we observe it is continuously changing, so that the elements required for its explanation must be motional with four dimensions, and may comprise the fundamental characteristics of both time and space. The infinitesimal distances or intervals between his point-events have thus for Einstein this amount of physical significance. They accord with the implications of all possible experiences of externality. He applies to them a highly refined calculus which, first of all, enables him to interpret his world-line as indicating the motion of a material point rectilinearly and uniformly, as in the earlier or special theory of relativity. This is symbolised by a straight path in four dimensions, the fourth dimension being the time-dimension which is implied in movement and required for the explanation of change. But by a further development, which converts his calculus into one much further-reaching, based on transformations in the differential equations founded on the co-ordinates of the point-events, such that these equations may be applicable in the case of every sort of system moving even with accelerating velocity, he gets for his result a principle which applies when the domain is one where it is necessary to recognise the wider aspect of relativity. The intervals between his point-events may have characteristics which have to be described in symbols analogous to those of curvature. This will be so wherever account has to be taken of the results of observing the varying and apparent deflections in relative position and velocity due to what used to be called gravitation. The old law of Newton was that a particle, when not interfered with by external forces, moves uniformly and rectilinearly. The new fundamental law which for Einstein has superseded it is that the world-line of an infinitesimal particle is a "geodesic" path. What is meant by a geodesic path? As I understand Einstein it is the track appropriate to whatever is the actual character of the space-time continuum. To such a track the ordinary ideas of distance in space and interval in time do not apply. For we have not yet got so far as these.

The mathematical interpretation of the law of gravitation, as I interpret it, is that it defines explicitly the

fulfilment by a particle of the principle of its geodesic track. That track will be a unique and limiting one. But its nature has so far not got any characteristics resembling what depends on measurement in space or time. If this formula seems a highly abstract guide to the ascertainment of the behaviour of matter, we must remember that the object is to get behind the merely relative ideas according to which in daily life we measure the relations between external bodies. It is these ideas which Einstein finds to have broken down, and he is searching for what is reliable.

At this point it may be useful to try to unravel what is apt to prove perplexing to students of philosophy in some of the statements of physical results. A real difficulty in following the discussion in the mathematical world of the epistemological foundation of space and time forms arises from the language which is employed, almost without restraint. Mathematicians are so used to technical expressions based on space and time as currently accepted that when they pass to relations in the continuum they adopt these expressions as if they were quite free to employ them. But in the conception of the continuum space and time have not yet been differentiated from each other, nor does its character allow of a treatment as if they contained quantities measurable as greater or less than each other. The tendency to use language which overlooks this is one which must cause difficulty to philosophy quite as much as to mathematics. Some mathematicians are well aware of it, and try hard to put on the brake. But the use of expressions appropriate only to conventional space and time is difficult to check. When we are told, for example, by so careful a writer as Professor Eddington in his book (at p. 70) that the unique or actual track in the space-time continuum is not the "shortest" but the "longest," the layman is puzzled until he recalls that "longest" does not imply what we usually mean by the word, as referring to measurement of length in space. What Professor Eddington says is quite intelligible if it is borne in mind that what he is really referring to is the technical result of equations referred to on his next page, and to the peculiar geometry which the minus sign of time requires. But I cannot help feeling that a good deal would be made clearer, not only to

the laity but to the mathematicians themselves, if the necessity for distinction were everywhere kept in sight.

Here there seems to be a vast amount of work awaiting the mathematical-logicians, which they have only just begun to enter on.

Einstein himself uses language in which he appears to treat the continuum as though it could be described in terms, not indeed of Euclidean space and time relations, but of relations of some sort in space and time; Gaussian co-ordinates, for example. "The following statement corresponds to the fundamental idea of the general principle of relativity: 'All Gaussian co-ordinate systems are essentially equivalent for the formulation of the general laws of nature'" (*The Theory of Relativity*, English translation, chap. xxviii). But in the days of Gauss the continuum had not been conceived as Minkowski conceived it later on, and it was hardly realised that the question of the character of its co-ordinates was not one of direct perception. It is far from clear, therefore, that it is legitimate to express the relations within the continuum in such terms, excepting as a useful mathematical device which can throw no light on the ultimate character of its subject-matter. Such devices are often very valuable. The task of the physicist is, for example, greatly simplified by the step of multiplying the time co-ordinate in his equations by the square root of minus one. But this is his own expedient for getting his equations into a workable form. No doubt the space and time elements, so far as they have an analogue in the continuum, must be described as related with what are opposite signs. But, even taking the most large-minded view of the mathematical processes which the equations exhibit, the suggestion is inevitable that when mathematicians use in their absolute equations the symbols of arithmetic what we are dealing with is measurable in a fashion in which by its very character it is not.

I know it will be said that these are questions which can be dealt with only by highly trained mathematicians, and not by mere students of philosophy. That is in a sense true. But the student of philosophy has at moments to jog the elbow of the mathematician, and to remind him of things of which he must take account when he is seeking to explain in what the real consists.

We have seen already how different from the loose ideas ordinarily associated with everyday experience are the precise meanings to be attached to timeless space and spaceless time. Neither can stand for more than an abstraction of reflection, and yet both concepts are required in order to account for the harmony of experience. We have to keep their significance in view from a wholly different standpoint in our analysis of the relation in the world-line. To the character of this relation these abstract conceptions are the very antithesis. We are in search of a law of nature which concerns what is fundamental to experience, and not merely of variable creatures of everyday reflection, such as are ordinary space and time. What must be the character of such a law, and how can it be sought for in a way that is logically admissible? That is what we want the mathematicians to make clear to us.

As I understand what they have said so far, it is this. They start off with the simple case of point-events in the continuum, assumed to be separated only by indefinitely attenuated intervals. Such intervals we may call, if we carefully guard ourselves from pictures of self-subsistent space and time, the shortest paths. We require co-ordinates for their definition which will not suggest anything involving some particular shape or measurement. They must be applicable in general terms to the basis of every possible space-time system.

For the description of such an interval it is necessary to employ a differential equation, as being the only effective means of eliminating what is irrelevant, and of at the same time attaining to precision. The path of a particle in the interval must, if the conditions of its limiting character are to be complied with, be geodesically the most direct of all natural paths, in the only meaning which can be attached to what combines spatial with temporal analogues, their inverse proportions notwithstanding. By "natural" I mean what is appropriate to the kind of reality to which the track belongs. In formulating this interval the equation describing it of course must not be confined to variables depending on any particular system of measurement. The equations and the co-ordinates employed in them must therefore be made, if possible, *co-variant* in such a

way that they may apply in the case of every possible space-time system. On this footing we may start by taking our ordinary perceptions and dissecting out their contents by abstraction. We have, of course, to be sure that the perceptions from which we start all belong to a single space-time system. The reason is plain. We depend throughout on being able to ascertain coincidences. Observation, in order to be of any value, depends in the main on our being able to ascertain that two points on which we have fixed attention stand in some relation of coincidence at the same moment in the same time-system.

But here there arises a further point. Coincidence of this kind does not require measurement. If the intervals are not of Euclidean straightness, but are of some sort of curvilinear character, there may still be coincidence, just as much as if the interval were a straight line. The co-ordinates which refer to magnitude may therefore express *any* form of magnitude, provided they define the coincidences in terms which express them, apart from any particular form in measurement. If a formula describing the interval mathematically can be found which will be true whatever the nature of the further co-ordinates introduced, provided they fall within the description of being functions of the original co-ordinates, there will have been discovered a mode of ascertaining the nature of the interval in the continuum with exactness, which will remain applicable if at a later stage there are introduced further values based on particular observations of the ordinary kind. When, by thus introducing particular results of observation, say of the heavenly bodies, we give to the new co-ordinates special numerical meanings, we shall still have preserved the general relation, and can make it the foundation of a law of motion that is at once of the utmost generality in application and independent of all particular systems of observation.

Mathematical investigation of a high order has led to the discovery of equations which express this basis. The " interval " can now be defined in terms which admit of indefinite variation in detail, while preserving the relationships which are necessary for its determination. The equations are " co-variant " for any substitutions of co-ordinate values. There is thus obtained an accurate

description for the continuum and for the activity in which it consists. Space and time as physical entities *per se* are banished from the ultimate foundations of physics.

The theory of how to find mathematical expressions of a character so general that they can be used in the equations descriptive of intervals in such a fashion that the equations remain true, however the co-ordinates to which they relate vary in detail, is called the theory of "Tensors." Tensors are expressions which seem to include intrinsic qualities of the continuum, and may be applied in the form of groups ascertained in reference to it. They stand for what are qualities more than for definite quantities, and they not the less admit of application to the results of observations made in empirical space and time of any kind, such as are the gravitational potentials. They are so applied by introducing the results of actual spatio-temporal measurements, and yet they are such that values of the same character for the ultimate relations in the continuum are obtained, whatever system of space and time measurement may be adopted. About Tensors, Professor Whitehead makes the grim observation that "the announcement that physicists would have in future to study the theory of Tensors created a veritable panic among them when the verification of Einstein's prediction was first announced." [1]

It is not easy to describe in ordinary language what can be characterised with freedom by mathematical methods alone. Still, there is room for an effort to do so, inasmuch as such an effort is required for the philosophical interpretation of the true nature of the continuum that lies at the foundation of our world in space and time.

If we fix our minds on the conception of an indefinitely vanishing phase in our experience of that world, and by abstraction extrude the notions of measurement and shape which arise in reflection, we find ourselves confronted with bare awareness of change. It is change in which space and time have not yet been discriminated, but

[1] The reader who wishes to try to explore the elements of the mathematics involved may find helpful a book by Professor Moritz Schlick, *Space and Time in Contemporary Physics* (English translation by Brose, Clarendon Press). Along with this he may read profitably Professor Eddington's book, *Space, Time and Gravitation*, at pp. 89 and 189. If he desires to pursue the subject into mathematical details he may turn to the *Report on the Relativity Theory of Gravitation* published by the latter (Fleetway Press, 1920).

is just the activity out of which we build up our conceptions of them. This activity gives us paths of the never static point-events towards which our actual experience tends as its limits. We approximate thus to these paths as what Minkowski called the " world-lines " of the point-events, and to " intervals " between them. Such intervals are neither spatial nor temporal, but they express what lies at the very foundation on which we build up our ideas of space and time as relations. Still, they can be described, for we are aware, even in this abstract region, of coincidences. The intervals intersect and are related to each other by what we recognise as positions in the activities that are antecedent to definite spaces and times. We can thus describe our world-lines with their intervals. This mathematicians do by defining co-ordinates of position for the coincidences observed, bare co-ordinates to which the ideas of shape and measurement have no application, but which are yet sufficiently describable to admit of their character being sufficiently ascertained in general terms. By the employment of differential equations, so as to obtain purely limiting notions, what is irrelevant is eliminated, and the dominating conception becomes that of points approximating with infinite closeness.

The equations which thus describe the relations of what is indefinitely vanishing in our actual experience have thus on their right-hand sides co-ordinates referring to infinitesimals of observation, but these co-ordinates express mere functions of position depending on bare coincidence in the result, and have at this stage nothing to do with either shape or measurement. Still, the equations define definite relations, relations which will continue to obtain whatever may be the shape and measurement subsequently superinduced as the result of observation and experiment. The equations, which are triumphs of mathematical genius, and are of a character so refined as to be very complicated, contain on the right-hand side the symbols of a set of functions of what may be termed, if we carefully qualify the ordinary suggestions of words, the foundations of the space-time continuum, extending to features out of which both space and time may arise. Shape and duration are excluded along with measurement. The expressions used are so formulated as to be applicable whether the co-

ordinates are subsequently developed into what are appropriate to space and time as Newton conceived them, and are so made rectangular, or are polar or oblique or of a different or curved nature. Whatever the character of what is later on observed is determined to be, the linear relation in the equations of the expressions defining the intervals will hold good. The name given by mathematicians to expressions of this kind is that of tensors. The tensor principle can be extended when our experience is such that account must be taken of matter as present in the continuum, and it then yields equations of a still more intricate character, based on certain very general characteristics of such matter, but still independent of space and time.

Our knowledge is rendered at a later stage particular, by observation and experiment; and this involves the application, not only of measurement to space and time, but of some particular geometry. According to Einstein's general theory of relativity there is no one geometry of the universe. The characters of the relations which we call space and time arise from the varying movements of bodies changing their situations relatively to each other and to the observer. The new method gives a law of such change which is independent of such relativity. We have seen how gravitation can be expressed merely as an illustration of movement, and how Newton's law of gravitation assumed a particular hypothesis as to space and time. Einstein therefore substitutes a more fundamental law, concerned primarily with relations in the continuum purely as such, and with the changing relations of objects independently of any particular space-time system. It is necessarily formulated as a law of activity in the continuum itself, presupposed before we can attain to shape and measurement. The path described is independent of particular forms. It depends on the character of the underlying continuum itself and is called a geodesic line. Newton's law of motion was to the effect that a point if undisturbed by any extraneous force moved uniformly and rectilinearly. Einstein's law, which extends to both inertial and gravitational effects, because of his principle of their equivalence, asserts that a point in motion in a gravitational field has as its world-line the shortest path in the continuum. Shortest only means most direct, having regard to the character in point of

anything analogous in the continuum to what we have in our heads when we talk of curvature. In a different sense the path may prove mathematically describable as the longest, or as a maximum. The fundamentally inverse relationship of the spatial and temporal characters may necessitate such a description as the outcome of the only appropriate form of the equations employed.

When physicists have to apply the method of Einstein, if they are to deal with the concrete facts observed, they measure in the usual way, and then bring the quantities so obtained within the scope of the tensor equations. In this fashion the basic laws expressed in the latter enable events in the space and time systems encountered to be correctly represented in their true characters. The specification required is made by ascertaining measured values—for example, the measurements of the distribution and motion of gravitating bodies. The functions expressed in the tensors thus get a particular application, but the fundamental relations and the laws which result from them remain. Misleading inferences based on what appears as it does merely from the situation of the particular observer are thus corrected. It was by so dividing the investigation into the two stages which the doctrine of physical relativity requires that Einstein was able to correct calculations, based on Newtonian assumptions, as to the objective and uniform character of relations in space and time, and to predict that the deflection of the rays from fixed stars observed on the occasion of the eclipse in May 1919 would be found to be what observation established, more nearly $1''{\cdot}74$ than $0''{\cdot}87$. His explanation of the supposed movement of the perihelion of Mercury was arrived at by the same method.

Lest this account of the method should seem lacking in technical clearness I will venture, though not without hesitation, to try to express it in other words more familiar to those concerned with the special subject immediately under discussion in this chapter. The general character of the continuum may, I gather, be described as follows. The intervals from any point-event P to the assemblage of neighbouring point-events have certain characters. These characters can all be expressed in terms of a set of functions of co-ordinates of P, so that if Q be a neighbouring point-event the relation of Q to P

depends (1) on the small differences of the corresponding co-ordinates of Q and P, and (2) on the above-mentioned set of functions. If these functions are regarded as the characteristic functions at P, then the relation of P to Q is defined by the differences of the co-ordinates and by the characteristic functions.

Now alternative systems of co-ordinates for the continuum can be adopted. Each alternative system of co-ordinates necessitates an alternative system of characteristic functions. But the relation is such that the characteristic functions at any point P of one system of co-ordinates can be expressed linearly in terms of the characteristic functions of the other set of co-ordinates. This property is called the tensor property of the sets of characteristic functions.

What I have ventured to say must be taken as pretending to record no more than it does, the impressions of a non-mathematician about what the mathematicians are saying to each other when they enter the borderland of philosophy and speak about it among themselves. The impression is that of a stranger in whose presence they talk, but who, although keenly interested in learning from them, is but imperfectly acquainted with a language which to them is one of second nature. They may, therefore, be gentle with him if his accent seems strange and his capacity to do justice to their words appears inadequate. His reason for listening and in his turn making comments does not appear to be an irrelevant one. They are in a territory that is occupied in common, and forbearance on both sides is therefore necessary. I do not believe that the fundamental conceptions are as obscure as some of the mathematicians take them to be. The reason they seem so is that they are concerned with matters which involve consideration of a more than merely mathematical character. For the rest I am not lacking in admiration for the splendid power of the instruments the mathematicians possess, and the wonderful results they have achieved with them; instruments which impress me not the less because it is beyond my powers to wield them.

It may have been observed how far-reaching are the consequences of the new interpretation of what lies at the foundations of our perception of motion. We are brought face to face with the necessity of giving it a meaning very

different from that which it had for Newton. Let us glance at the contrast between these meanings. For Newton it is, for example, a proposition of universal application that two material bodies attract each other with a force proportional to the product of their masses and inversely proportional to the square of their distance. But if the general theory of relativity be true this is a statement of fact which, if it professes to be exact, is quite inadequate. It assumes, to begin with, a single definite space and a single definite time, in which the two bodies are taken to be in simultaneous positions. But, as Einstein and Professor Eddington, as well as Professor Whitehead from another point of view, have said, what is simultaneous in one time-system may not be simultaneous in another, and the distance between two bodies, as well as apparent coincidences, may also have a different significance in different space-systems. The law is therefore incomplete. It is only by going deeper down that we can hope to find a fundamental and universally true law of motion.

Inertial and gravitational mass, for the general theory of relativity, are indistinguishable in character. They have no absolute significance. Mass finds its meaning in the presence and relative positions of bodies. Mechanics now seems to become a general theory of relative motion, so far as direct observation is concerned. Any fundamental law of mechanics must, if difficulties over the conception of action at a distance are to be eliminated, be a differential law, containing only the description of an interval with no finite distance between the point-events it separates. In the special theory of relativity the velocity of light was treated as an absolute constant, and had to be so. It appears questionable whether in the light cast by the general theory it ought to be thus treated.

There is no unvarying geometry of distance or measurement. Just because in the general theory of relativity the ultimate relation in the continuum which underlies all particular observations preserves its form irrespectively of how the variables that form the co-ordinates in its equations are estimated in shape and quantity, so the relation has no self-contained and direct application in our current interpretations of observations of nature, and does not, taken by itself, express the time and space of our individual experience. But the relation is basic for all forms and

variations of such experience. The fundamental law of motion must therefore be of a character quite different from that of gravitation as stated by Newton. It is, as Professor Eddington has pointed out, not so much a law as a definition, expressing the way in which point-events in the continuum are related. It supersedes, not only Newton's law of gravitation, but his principle of inertia, in so far as that implies that a particle when undeflected by extraneous forces moves uniformly and rectilinearly. The new law is a mathematical expression which describes the character of the activity in the " world-line " of the continuum of a particle as being a geodesic line in that continuum.

Into the differential equations in which the fundamental relation is expressed there are introduced the " tensors," which admit of relations to the intrinsic qualities of the continuum of further and varying elements to be derived from particular observation. The tensors seem, as I have remarked, to represent qualitative characteristics rather than ordinary quantities, and to express the relations of the point-event in the field to which they belong in the continuum. These factors appear in the equations in their further forms in groups, but the older mathematicians, who anticipated their shape, hardly thought of these fundamental elements excepting as having the nature of geometrical quantities, by which the metrical properties of space were to be ascertained. Such tensors not only allow of a physical interpretation under Einstein's doctrine, but such an interpretation is called for in order to provide an adequate expression for motion in the indefinitely varying forms of the gravitational field. The development of the original formulas is required to define the way in which they apply for the purposes of physical description. The original formulas themselves are essential if our knowledge is to be more than merely relative to our position as observers. For, to quote Einstein's own words in the chapter on the space-time continuum in his book on the *Theory of Relativity*, " Every physical description resolves itself into a number of statements, each of which refers to the space-time coincidence of two events A and B."

By applying his development of the calculus in this wider form Einstein is able to determine the exact nature of the distribution and motion of every sort of gravitating body.

It is a triumph for mathematical methods. But it is not only what we call matter that is subject to gravitational deflection. From the standpoint of relativity energy, integrated by operation in time into enduring action, must obviously appear, whenever that operation can be observed, as subject equally with what is called matter to apparent gravitational deflection. Such energy, moreover, becomes indistinguishable in character from inertial mass. This results from the fundamental principle underlying the general theory of relativity.

The fruits of that theory and of such laws as I have above referred to do not cease here. They have been developed by their author into mathematical consequences, which have given explanations of what was inexplicable on Newtonian principles taking no account of relativity. Whatever criticism may have in store for his doctrine, it has at least accomplished several great advances. It has made the physical picture which the universe presents more intelligible to science; it has banished out of physics the necessity of attributing an objective character to gravitation, the force which has always been under suspicion in so far as it seemed to necessitate the hypothesis of action at a distance; and, finally, it has enabled all the laws that underlie physical events to be reduced to differential equations, an advantage not the less real because only a mathematician can be happy with it.

One word more about space. It is often said that Einstein has sought to abolish Euclidean space and Euclidean geometry with it. This is not accurate. His method is one of complete relativity, so far as direct experience goes. It therefore applies to every kind of space, and admits of Euclidean as well as of non-Euclidean geometry, whenever applicable. That is because space and its shape and measurement are on his theory what they seem to be only by reason of the position of the observer and the system under which he observes. Accelerating velocities and deviations from rectilinear movement in relation to each other of systems of observation may give the space that appears any form. It can have no standard or absolute shape, independent of the system conformed to in observation, consistently with the principle of relativity. Consequently the spatial universe may as well prove to be non-Euclidean as to be Euclidean, and its lines and its

planes may as readily possess curvature as straightness. It follows that we may require a number of alternative geometries. That this should be so is natural as well as necessary, and the calculus of Einstein is so fashioned as to provide for it. But Euclidean space obviously remains as one of the infinity of variations of which his method can take account. It is an aspect of nature which, so far as logic is concerned, need not have presented itself, though in practice we treat it as having done so, and find that the assumption is sufficiently true for most purposes. Even Einstein's variations of that assumption are not very great for everyday practical purposes. But, from the standpoints of science and philosophy alike, we have to distinguish the kind of reality that pertains to special and particular aspects of space and time from the permanent character which belongs to those ultimate underlying relations, ascertained only analytically, but not the less as belonging to reality, that are the foundation of the mathematico-physical laws relating to the disposition of point-events, and so to what is believed by Einstein to be omnipresent in nature.

In a remarkable article in *Mind*, written in the April number for 1920, the substance of which on this point is repeated, but perhaps with less emphasis on its philosophical suggestions, in the book he has recently published under the title *Space, Time and Gravitation*, Professor Eddington has pointed out that Einstein's equation, in which he expresses the fundamental principle of what used to be called gravitation, is not in the ordinary sense a law of nature, but really a highly pregnant definition of such mere alteration of position as might be attributable in a vacuum. The equations concerned deal primarily only with the abstract entities we call point-events. The theory of relativity tells us that in the primary definition we are not yet concerned with matter, but only with motion treated so generally that we have eliminated the elusive idea of particular particles of matter remaining permanently identical, and also all particular measurements of space and time. We are not yet occupied with what our direct perception will disclose about the details of the external world. We are occupied only with the basic conceptions apart from which that world would not have any ordered meaning for us. It is only after we have applied these

conceptions that we learn what the density and state of motion of matter truly signify for the man of science. We have then to deal with what are further elements, belonging in a less degree to the foundations of experience, but conforming to the principles which lie at these ultimate foundations, because otherwise such elements could not present themselves in experience at all. To those who know Kant's *Critique of Pure Reason*, something of an analogy suggests itself here. Professor Eddington goes on to say that in reality matter does not cause unevenness in the gravitational field, inasmuch as the unevenness of the field is just what we really mean by matter. He suggests that " the intervention of mind in the laws of nature is more far-reaching than is usually supposed by physicists." He is even " almost inclined to attribute the whole responsibility for the laws of mechanics and gravitation to the mind, and deny the external world any share in them." " The physical theories," he says in concluding his article, " which form the bases of this argument are still on trial, and I am far from asserting that this philosophy of matter is a necessary consequence of discoveries in physics. It is sufficient that we have found one mode of thought tending towards the view that matter is a property of the world singled out by mind on account of its permanence, as the eye ranging over the ocean singles out the wave form for its permanence among the moving waters; that the so-called laws of nature which have been definitely formulated by physicists are implicitly contained in this identification, and are therefore indirectly imposed by the mind; whereas the laws which we have hitherto been unable to fit into a rational scheme are the true natural laws inherent in the external world, and mind has had no chance of moulding them in accordance with its own outlook."

In using such language Professor Eddington is in the metaphysical borderland of mathematics. The mind, whose moulding influence he suggests, does not present itself to him as mind in the foundational interpretation which Aristotle, for example, gave to it. It seems to mean rather a particular human mind, or at least a mind distinguished as a self, in some sense separated from an independent system of nature that confronts it, while moulding the appearance of that system to the form which it imposes. If so, what is important is rather the form

thus imposed *ab extra* than the merely residuary objective existence. That existence may account for certain natural elements which the mind cannot mould in accordance with its own outlook. It may even furnish, as Professor Eddington suggests in his article in *Mind*, the four-dimensional aggregate of point-events. But the laws of gravitation and of mechanics generally he doubts whether it can account for. If he is justified in this doubt, his position seems to be even more akin to that of believers in the principle of " Representative Perception," like those of the school to which Sir William Hamilton belonged, than it is to that of Kant, although it is nearer to that of Kant than to the doctrine of Aristotle to which I have already referred. Einstein himself does not seem to have pronounced in favour of any particular philosophical views, although apparently, like his Cambridge commentator, at moments he leans towards subjectivity in his interpretation of our experience of relativity. But not altogether. For his German disciples, Freundlich and Schlick, in their books on his doctrine, have both drawn attention to its connection with an observation made by Riemann which bears on the necessity of finding for the measurements of time and space, in whatever general form they may be expressed, some ultimate physical basis. The last-named mathematician used these words : " The question of the validity of the hypotheses of geometry in the infinitely small is bound up with the question of the ground of the metric relations of space. In this question, which we may still regard as belonging to the doctrine of space, is found the application of the remark made above ; that in a discrete manifold the principle or character of its metric relations is already given in the notion of the manifold " (because we can measure it by mere counting, there being no continuous transition from one single element to another, and each being a single entity in an arithmetical aggregate), " whereas in a continuous manifold this ground has to be found elsewhere, i.e. has to come from outside. Either, therefore, the reality which underlies space must form a discrete manifold, or we must seek the ground of its metric relations (measure-conditions) outside it, in binding forces which act on it." Such " binding forces " both Freundlich and Schlick appear to find in relations between the intervals of points in motion and the influence of a gravitational

field. The absolute equations, which Einstein has adopted from Riemann, give a world-line in which a point moves, as described in terms of the new co-ordinates in the equations, under gravitational influence, that is in time and space of any form. The factors which stand for gravitational forces therefore represent the inner or objective ground of the measure relations of the space-time manifold. Freundlich, however, in Note 6 to his book on the foundations of Einstein's *Theory of Gravitation*, suggests a doubt. He says that until recently the energy which a body emanates by radiation was regarded as a quantity which varied continuously. But he remarks that the researches of Max Planck have led to the view that this energy is emitted in " quanta," and that therefore the measuring of its amount is to be performed by counting these " quanta." The reality underlying radiant energy is in that case a discrete and not a continuous manifold. " If," he observes, " we now suppose that the view were gradually to take root that, on the one hand, all measurements in space only have to do with distances between æther-atoms ; and that, on the other hand, the distances of single æther-atoms from one another can only assume certain definite values, all distances in space would be obtained by " counting " these values, and we should have to regard space as a discrete manifold."

Into the physical questions thus raised in connection with the " quanta " theory, I do not feel myself competent to enter, and I will not presume to do more than refer to their existence, and only mention them because they seem to me to point to considerations which go beyond mathematics and physics and belong in part at least to the domain of philosophy. To these I have referred in the preceding chapter. It does not seem clear that, if Riemann's " binding forces " are necessary, they have a sufficient explanation in the suggestion of gravitational equivalence, or even that the necessity of a continuous manifold as their independent physical foundation is sufficient, on the only principles with which Einstein concerns himself. For space and time and their measurement belong exclusively to a later stage, a stage which had not yet been differentiated in Riemann's day, and to which stage the " quanta " theory, concerned as it is with physical energy, may turn out to belong.

But even so, in his apparent unconsciousness of how little of an epistemological nature he assumes, Einstein is in conflict with views expressed by Professor Whitehead. In his *Concept of Nature*, the latter adheres firmly to the hypothesis that nature can be investigated as self-contained apart from and independently of the mental operations of the observer. The meanings which are of its essence represent our renderings of an actual and objectively real character in what we apprehend in these meanings. He disclaims any intention in saying so to trench on farther-reaching questions relating to any system which may explain mind and its objects in their relationship. Mathematics and physics are for him concerned only with an object-world of nature conceived as self-subsistent. So far he does not differ in fundamentals from what Kant might have said. He simply does not enter on it.

But not the less Professor Whitehead declares emphatically that the theory of relativity, with the general results of which he is in agreement, is in reality wholly consistent with this view, and has nothing to do with any merely subjective interpretation. If the relations between event-particles are looked on as mere formulas in which we express the characters of the space and time our minds have adopted, they are of a subjective character. For him it is therefore impossible to attach any clear conception to the Einstein explanation of space and time, although he is in the main in agreement with its results. According to his own view there is an indefinite number of actual discordant time-series and an indefinite number of distinct spaces, and any correlated pair of these is sufficient for the filling in of our descriptions of the physical universe. We employ naturally one single time-series when we measure, but we have to remember that the " creative advance " of nature imports as actual a variety of such series. The whole bundle of these has to be taken into account, with the variation in co-ordinates, if we are to measure this factual advance of nature. The differences, when we neglect the necessary distinctions, are usually very small, and we do not notice them, but the neglect of them has led in the end to the break-down of the Newtonian method. In that method, for example, the law expressed for gravitation assumes only a single definite time and a single definite space, and the masses attracting each other are assumed

to be in positions which are really simultaneous, whereas simultaneity may mean what differs for observers with different time-systems. "The apparent paradoxes of relativity arise from neglecting the fact that different assumptions as to rest involve the expression of the facts of physical science in terms of radically different spaces and times, in which points and moments have different meanings." [1] "The observed motion of an extended object is the relation of its various situations to the stratification of nature expressed by the time-system fundamental to the observation. This motion expresses a real relation of the object to the rest of nature. The quantitative expression of this relation will vary according to the time-system selected for its expression." [2] Accordingly, although time and space are abstractions they signify real facts of nature, notwithstanding that what one observer means by them is different from what another observer, situated in another position, will mean. Our measurements when expressed in terms of an ideal accuracy are measurements which express properties of the space-time manifold, in which space and time have their foundations in the inseparable dimensions that characterise its passage, and are represented by the general co-ordinates of which the absolute equations express the functions. Thus space and time refer back for their origin to the twofold character of the continuum as an actual fact of existence independent of us, and are not of the subjective character which, according to Professor Whitehead, is assigned to them by the school of Einstein.

The radical difference may, I think, be expressed thus. Professor Whitehead holds that what we perceive are events in their passage, as defined by the character of a continuum or manifold in which space and time have not yet been differentiated. These events we present to ourselves reflectively, yet, as part of their reality, as objects, and by a further process of abstraction we come to relations between these objects, which we determine as relations in space and in time. But the basic fact in our perception is the continuum, upon which our ideas of objects and of space and time alike are erected by us. It is to the real character of the continuum that science must therefore refer back in the search for

[1] *Concept of Nature*, p. 192.
[2] Ibid., p. 195.

final truth. Our space and time systems are the varying outcome of interpretation of the contents of durations in our perceptions, and we employ varying standards of references in these interpretations, dependent on our situations. In this last point I read Professor Whitehead as not differing from Einstein materially. The conflict of view arises over what it is that we interpret. For Einstein this appears to be a world of objects already there in space and time, but in space and time rendered in different forms and measurements depending on the situation of the observer. Einstein seems to think that what we perceive are objects and not events, and relations in space and time of which only the shapes and measurements vary. The continuum for him seems to be got at indirectly by inference, and not to be the actual basis of nature as directly known. Despite what Einstein says, I think that Whitehead is nearer to the position formulated by Minkowski himself than Einstein is. The question is one of great importance for the theory of knowledge, and uncertainty about it has already led to ambiguity in the language of some physicists of eminence, who speak of the continuum as though the relations within it could be described in terms appropriate only to measurement, such as " longest " and " shortest." No doubt the application of tensors has enabled these to avoid practical difficulties, but the obscurity in point of principle seems to remain.

From the merely philosophical standpoint of the present book, it seems as if that Professor Whitehead is on firm ground, in so far as he does not assume the exclusive truth of any particular philosophical theory. The great difficulty, however, always is how to keep clear of metaphysics, and I am not sure that he altogether does this.

It is all very well, when something, say *ds*, has been described as " conceptual," to ask, as he does, conceptual of what ? Mathematicians experiment comfortably with *ds*, and describe it in equations as though they were describing a " thing." But the " thing " has to be treated as what is called infinitesimal, and the laity have been taught that infinitesimals are now banished out of mathematics, excepting as symbols for limiting relations of order in quantity. But if what is so symbolised is only a relation it is surely notional or a general conception or interpretation. What is being described is what is of a universal

character—in other words, a concept. This does not entail either that universals are to be taken as floating about in nature disembodied from particulars, or, as the only alternative, that they are unreal. They may have existence in union with particularity, a phase from which they are detachable only by abstraction. It may be quite right to talk of an infinitesimal, if we remember that it is only by abstraction that we can do so, and that every phase of existence for sense as such is excluded from the description. If reality has for its form concrete universality, in which the object of knowledge can present itself as particular for sense (either actually or as imaged) as well as in generality for thought, and is in neither case severable from the subject in knowledge, the puzzle disappears. It is in this form that we appear to feel and know. There is no feeling apart from some factor in it of reflection, and no reflection excepting in images with a pictorial factor. Why do we hesitate to accept this, which is conveyed to us by our own experience as a cardinal fact of reality ?

The answer is that it is because we have hypostatised the method, so valuable for physics, of treating nature as self-contained, and so closed to mind, into a principle of absolute and not merely relative application. If what mind finds in nature when it experiences it is what is of the same character as itself, there is no reason for rejecting the method, merely because it is one which depends solely on a standpoint that is chosen for convenience, and is adequate only relatively to the purpose for which it has been adopted. The difficulty has been raised by the assumption that we can go behind the fact that we know, and account for knowledge itself, instead of confining our study to the forms it assumes. One of these forms is human knowledge, or experience, and this is obviously no final form. Much light is to be got on the reasons why it is what it seems to be by the study of nature by itself and of the fashions in which intelligent beings appear in course of that nature. But such a study assumes knowledge as the condition of its possibility, and even of its very meaning. On what knowledge is, as distinguished from the genesis of the particular forms in which it displays itself, no light is cast or can be cast. To attempt such an inquiry is to deceive oneself, as do the sceptics. The character of thought is

always to extend beyond itself. That is because of what has been called, from ancient times onwards, its dialectical quality. It is never static. It is always reaching beyond its own distinctions. That is where I think that the New Realists have done less than justice to the facts.

If we approach the question from another side, we get the same result. As Professor Whitehead points out, the notion of uniform space and time is only got by abstraction from objects, as distinguished from events in nature. It is an intellectual construction that does not correspond to the facts. For space and time systems are relative, and in their character independent of and different from each other. Still, they must in some way be congruent, for otherwise we could not compare them, and so have the knowledge we possess of the world of nature as an entirety. This, he says, is possible because there is one fundamental factor which is everywhere and always constant, the relation which every event and every relation between events bears and must bear to our direct awareness of it. In other words, relation to mind is essential to nature, which would not be nature apart from this relation. Nature is thus only relatively and not finally closed to mind, and is far from being independent of it, although for our limited practical purposes it is useful, with a view to concentration on a standpoint, to ignore the dependence. This we seem to cease to do, however, when, as we must, we treat nature as congruent. We can only make it congruent, if I interpret Professor Whitehead aright, by bringing in what is mental; call it " sense-awareness " or the fact of knowledge as you please. We are thus again brought back to the view of knowledge which is fundamental to the argument of this book. The distinction of the mental from the non-mental world ceases to be final, even for physics.

At p. 32 of his *Concept of Nature*, Professor Whitehead says:

" In considering knowledge we should wipe out all these spatial metaphors, such as ' within the mind ' and ' without the mind.' Knowledge is ultimate. There can be no explanation of the ' why ' of knowledge; we can only describe the ' what ' of knowledge. Namely, we can analyse the content and its internal relations, but we cannot

explain why there is knowledge. Thus causal nature is a metaphysical chimera; although there is need of a metaphysics whose scope transcends the limitation to nature. The object of such a metaphysical science is not to explain knowledge, but exhibit in its utmost completeness our concept of reality."

I agree, and I think that Professor Whitehead has shown, more than any other writer on mathematical physics that I know, the extent to which the relativity principle conducts us, whether we will or not, into regions more extensive than those that are assigned to the kind of science to which general opinion has so far taken it to be confined. Does the question at issue turn on considerations that genuinely belong to the domain of physical science? I doubt it. An assumption appears to be inherent as its basis. That assumption is that mind is a thing, standing in an external relation to another thing, called nature, which produces on it a causal result called knowledge. The theory underlying the assumption is that we can get behind knowledge and explain it. But suppose for a moment that we cannot make this assumption in an intelligible form. That we do make it in daily life is no doubt quite true. So it was quite true that the Newtonian physicists successfully assumed that for the purposes of daily life time and space were self-subsistent and uniform entities. But the sanction of success in practical life, though enough for many purposes, has not proved to be in the end enough for science. Is that sanction enough to justify for men of science the tacit assumption of the general hypothesis about the nature of knowledge? For they not only seem to get into an *impasse*, but they get there by neglecting warnings which have come to them, as I have already indicated, from various schools of thinkers since the days of ancient Greece. It is not enough for men of science to say that they do not wish to concern themselves with metaphysics, unless they can show that they have kept out of metaphysics altogether, and have not tacitly assumed a metaphysical principle which may turn out to be wholly unsound.

But I will not pause further to dwell at this stage on the significance of such an outlook. For that significance is the underlying principle of the present book, its " single

thought," and in the subsequent chapters the principle will be developed.

Some of the pronouncements on which the various schools of contemporary physicists agree bring us very near to that borderland in which science and philosophy approach each other, and they fit in with a good deal that seems to be light which the doctrine of relativity, in the wider form which philosophy gives to it, throws on the problem of the nature of knowledge. How the teaching of the philosopher and the physicist may converge in this direction is illustrated by Bergson. His students may remember that, as I have already reminded my readers, he insists on mathematical time and his own " duration " being quite different. He points out that in reflection we always spatialise time into discrete intervals which are constructed in spatial form. We thus seem to enable ourselves to count equal intervals of time, and also coincidences in it which we call simultaneities. The time-space relation so created in our minds becomes thus a fourth dimension, which, because it is essential, we tacitly introduce and add to the three ordinary dimensional relations of space. It is in this way that duration is for Bergson made to assume the form, in reality illusory, of a homogeneous medium, and that the feature connecting space with time, which we call simultaneity, is introduced as if it were an actual fact directly observed. A space-time manifold is so constructed by the mind. Questions are thus raised concerning relativity to the observer, arising from the artificial character of apparent simultaneity.

But the name of Bergson is not the only name which comes to one's memory in reading Einstein.

If you walk along the promenade on the venerable fortification or mound which surrounds the old university town of Göttingen, you come upon a curious statue of two men. One is a physicist kneeling by a trough in which are represented waves of water, the motion of which he is apparently trying to explain to himself and to interpret as exemplifying some general law. But he seems puzzled, and he looks upward to another figure bending over him, and apparently suggesting a solution for his difficulty. The second figure is that of a man of very striking appearance. The face is a highly intellectual one, and the expression, though grim, suggests immense power of mind. It is

that of Gauss standing over his colleague Weber, to whom he looks as though he were suggesting the solution of some mathematical difficulty which is perplexing the latter. It is impressive for those who believe, not only in the boundlessness of the range of abstract science, but in the continuous development of great principles when once established, to observe that methods devised by the insight of Gauss, seventy years ago, should still serve men like Einstein to-day in a fresh domain. For Gauss discovered a mathematical scheme which remains still appropriate for expressing to-day in the generality, unrivalled in its kind, of mathematical language, the relation to each other of the points in any sort of space that has to be defined and measured. As many co-ordinates, which may be either straight or curved as is required, are assigned to each point as the continuum has dimensions. The method of Gauss was so devised as to be capable of application in what is called non-Euclidean geometry as well as in Euclidean, and it could be so adapted as to include among its co-ordinates one to represent time. The general laws of the new version of physics, as Einstein has proposed it, thus finds a convenient mode of expression in the method proposed by Gauss for dealing with space in its most general features and possibilities many years before Einstein's version was dreamed of.

It is interesting to remember how the way was thus, nearly three-quarters of a century since, prepared for thinkers like Einstein and the interpreters of the doctrine of quantitative relativity. Gauss must have possessed one of the most extraordinary mathematical intellects that has appeared since Newton died. His genius enabled him to anticipate ideas which were to mature only long after his time. He had the gift of overcoming mathematical difficulties which seemed insuperable to others of his own period. He was a man, too, of resolute character in carrying out his ideas. It is recorded of him that when he wished to bring to the test his doubts as to whether geometry had more than an empirical character, he insisted on measuring with theodolites the angles which three rays of light, emitted from three high points in Germany, the Brocken, the Hoher Hagen, and the Inselberg, made with each other. The purpose was to determine experimentally whether the angles of a very large

triangle actually amounted to two right angles. In the Chair of Mathematics which he held at Göttingen, a university distinguished, like Cambridge in our own country, as the home of a series of great mathematicians, Gauss was succeeded after a brief interval by Riemann. The latter died young, but his was a genius second only, if indeed second, to that of Gauss. Between them they evolved much of the foundation of the difficult mathematical methods which Einstein was to develop still more fully later on, methods which are not the less difficult because they conduct those who apply them into that border country of which I have already spoken.

But Gauss and Riemann were not the only teachers at Göttingen who were pioneers in laying the mathematical foundations of the principle of relativity. Hermann Minkowski was professor there from 1902 to 1909. He it was who saw more clearly than any before his day that space and time were inseparable, and, taken by themselves, could be regarded as mere abstractions from a continuum which possessed the fundamental character of both in indissoluble union. The form of activity in this continuum he named the " world-line."

Like Riemann, Minkowski was a man of genius who died young. He was born in 1864. Very early his published papers attracted attention, and a Chair was founded for him at Göttingen. He died in 1909, having left a reputation behind him nearly comparable to that left by Riemann. His most famous contribution to the literature of relativity was the address he delivered, under the title *Raum und Zeit*, at Cologne on the 21st of September 1908, before a scientific congress. In this address he announced his conviction that at the basis of experience lay, not space, but an infinite variety of space-systems, and that the foundational reality for physics was a " world-line," in which the truth of the phenomenal world must be looked for as a four-dimensional world from which space and time must be taken as arbitrary and derivative constructions. Everything turns on what we mean by rest, and this depends on how we determine arbitrarily our space and time in observation. Three-dimensional geometry becomes a mere chapter in the book of four-dimensional physics. Space and time, as Newton conceived them, sink down to

a new and lower status as mere shadows of the one four-dimensional world.

It is this purely derivative character of the space and time of current physics, and the consequent impropriety of applying language descriptive of them to the ultimate manifold, that Professor Whitehead seems to me to have brought out in his treatment of relativity, more thoroughly than Einstein or even Minkowski himself has done.

I have now endeavoured to convey some idea of what relativity in measurement appears to import for philosophy. The sketch I have made is one only of outline, but it will serve as an introduction to applications of the principle, in more general forms than those that are mathematical or physical, in the discussion which follows.

Physical relativity must not be looked on to-day as more than the beginning of a new outlook for mathematicians and physicists. The doctrine has much in its appearance to commend it. But it is apparently as yet only in a stage that is incomplete. Not only are fundamental principles unsettled, but special problems remain to be solved. For instance, what light does the new doctrine throw upon rotation? A rotating body bulges under what we call the action of centrifugal force which gravitational attraction does not adequately restrain and so compensate for. Newton naturally held rotation to be an absolute fact. It does not depend on relative position in the same way as motion of translation does, and such facts of observation as those yielded by Foucault's pendulum and the gyroscope bear out the view of its independence of anything beyond itself. What, then, is the significance of the apparent centrifugal force to which the bulging of a rotating body is due? Does the principle of relativity in measurement of position and of motion in translation still leave open the possibility of some world-wide inertial frame existing independently of relative space and time systems? Some mathematicians suggest this. Others, like Professor Whitehead, point out that Newton's laws of motion are only true if the axes to which they refer belong to a body which is not rotating, and is not of accelerating velocity. If this is forgotten, instances will appear in which action and reaction will not be equal and opposite, and uncompensated forces will show themselves as in rotating bodies. Is this explanation one

which in itself is sufficient? These and analogous points remain for the mathematicians to agree on and explain to us laymen.

Again, what is the character of the universe? Is it that of a universe which is finite and yet unbounded? Einstein himself suggests this, and gives reasons for thinking that it may be cylindrical. If, for simplicity, we start off by thinking of ourselves as existing in space of only two dimensions instead of three, that is to say as in "Flatland," then so long as these dimensions are plane certain perplexities do not arise. But suppose that the two-dimensional surface is not plane, and that we live on a curved surface! We shall not know it, because we have no experience of a different kind to guide us. We shall then find what we took to be our straight lines of measurement returning on their origins in circular or other curves. The curved world will thus be finite, although there is no limit to it to be experienced. Now a world with three dimensions that are curved instead of straight can be devised just as well as one of only two. Riemann, Helmholtz, and Poincaré have long ago made such an idea intelligible in popular form. Such a curvilinear space must of course not be thought of as something carved out of a larger space of the ordinarily imagined character. It is to be taken to be all that space can mean as well as can be. And if space itself be thus of a really curved nature, then we live in a universe which, if unbounded, is not the less finite.

What the form of the order of things in that universe is we do not yet know. Einstein and his disciples have only entered on inquiry as to the answers science can give to the questions raised. So far they are able to do little more than reveal to us unlimited possibilities of truth attainable by reflection. But at least they have helped to emancipate our minds from the deadening effect of conventional ideas.

CHAPTER VI

RELATIVITY IN EXPERIENCE GENERALLY

EINSTEIN'S principle of the relativity of our measurements in space and time cannot be taken in isolation. When its import is considered it may well be found to have its counterpart in other domains of nature and of knowledge generally. Before we enter on this question let us be clear as to what the relativity principle in physics has brought us. We may define it as Einstein himself has done, or with the greater freedom exhibited in Professor Eddington's book, and also in German expositions such as that of Schlick. Or we may give to the principle the more objective interpretation reached by Professor Whitehead, who is very definite in rejecting anything like a tendency to split externality into two phases, one that of the space-time continuum and the other that of space and time systems as they actually occur in an independent experience. There is a broad feature which all the different views exhibit in common. Into the results apparently yielded by direct sense-awareness concepts have not only entered, but have entered with transforming power.

Our biological notion of our organisms as percipient make this in practice difficult to visualise. We think of our sensations as originating in the contact of the afferent extremities of our nerves with something in the environment independent of the organism. It is thus that our knowledge of the external world seems to have reality and independence. It is therefore, on this hypothesis, somewhat unintelligible to suppose that concepts can enter into that reality and independence. For concepts look as though they were essentially creatures of mere reflection, always general and applicable to an infinity of singulars indifferently. They are not happenings in time and space but identities in mode of apprehension. If the

biological view of knowledge be the final one they cannot really enter into the particularism of reality in sense-perception.

But the biological view of the organism as a thing receiving impressions from its environment in truth presupposes the vision of an entire world within which the receiver, the receiving, and the received have already the places presupposed by the necessities of the process. A biological epistemology can therefore only possess relative truth. It can no more account for our knowledge of that world, which it has already in its explanation assumed to be there, than can the classical notion of space and time as absolute account for facts of observation which modern physics has placed beyond doubt and which yet appear to be irreconcilable with that notion. Its case is indeed a much worse one, for it cannot account even for itself. We are thus driven back to the revision of our popular idea of the relation of the biological thing to its environment as an explanation of knowledge. As we shall find in more detail later on, knowledge cannot be thus explained. It is itself presupposed, even when we distinguish a particular sensation from a concept. The distinction between the two falls within knowledge itself and presupposes it. Only for the sake of convenience do we refer to sensations apart from concepts or concepts apart from sensations. When we do this it is for a reason analogous to that for which the mathematician permits himself to talk of infinitesimals, and to calculate with them as though they expressed more than mere relations.

It is therefore not surprising that the theory of relativity should be considered to have shown that the reality of a world of space and time can only be stated in terms of concepts. For what we call nature turns out to have been permeated by the activity of reflection. It is interesting to notice how this conclusion presents itself to the minds of men of science themselves. Professor Eddington, who is both an acute and a courageous thinker, uses these remarkable words at p. 197 of his book, towards its conclusion:

"Our whole theory has really been a discussion of the most general way in which permanent substance can be built up out of relations; and it is the mind which, by insisting on regarding only the things that are permanent,

has actually imposed these laws on an indifferent world. Nature has had very little to do with the matter; she had to provide a basis—point-events; but practically anything would do for that purpose if the relations were of a reasonable degree of complexity. The relativity theory of physics reduces everything to relations; that is to say, it is structure, not material, which counts. The structure cannot be built up without material; but the nature of the material is of no importance."

Professor Whitehead would hardly accept this interpretation of the relativity doctrine, but we have seen that there is reason to regard him as proceeding in the same direction by another path. However, therefore, we look at it, the theory of relativity in physical measurement means this, that our measurements are what they are because of the concepts through which knowledge effects them. Whether these concepts assume the form of co-ordinates, such as those which are harmonised by the Lorentz equations for transformation used for the earlier or special principle of relativity, or whether they are the "Tensors," which have been adapted by Einstein for the measurement of the continuum in its relation to forms of every order in the actual space and time of our experience, we come to the same result. It is through general principles, and not by immediate awareness in its simplicity, that we get our knowledge of physical nature, and the reality we discover is of an order in character the same as that of our knowledge about it.

It is of special importance that this should have come out so clearly in physics, the science which is concerned with nature in the aspect in which are presented externalities absolutely excluding each other. It is not less important that in other domains of science a similar conclusion should prove inevitable.

In biology, the idea with which we are primarily concerned is, not that of cause, as in physics, but that of end. It is essential for progress in accurate interpretation to distinguish these two clearly. They belong to different orders in thought, and much confusion has resulted from failure to distinguish their respective characters.

Cause is a very indefinite expression. Externality to the effect is of its essence, but its meaning is relative in all

cases to the subject-matter. For the housemaid the cause of the fire is the match she lights and applies. For the physicist the cause of the fire is the conversion of potential into kinetic energy, through the combination of carbon atoms with those of oxygen and the formation of oxides in the shape of gases which become progressively oxidised. For the judge who is trying a case of arson it is the wicked action of the prisoner in the dock. In each case there is a different field of inquiry, determined from a different standpoint. But no such field is even approximately exhaustive. The complete cause, if it could be found, would extend to the entire ground of the phenomenon that had to be explained, and this ground would reach, not only to the whole of the world, but to the entirety of the universe. More than this; if the ground could be completely stated it would be indistinguishable from the effect itself, including, as it would do, the whole of the conditions of existence. Thus we see that when we speak of the cause of an event we are only picking out what is relevant to the standpoint of a special inquiry, and is determined in its scope by the particular concept which our purpose makes us have in view. The physicist who investigates the abstraction called physical nature excludes from his attention many forms of activity which others observe and which belong to a different domain.

The end that for the biologist determines the activity of the living organism is a phenomenon of an order of which the special methods of the physicist can take no account. This kind of phenomenon also can only be reached through adequate concepts, but the concepts belong to a different order of thought. In observing ends as guiding the behaviour of the merely living organism, we have not as yet to do with conscious purpose, itself belonging to quite a different order, that which is mental and not merely biological. The end is not the less quite different from a cause. Every event which we pick out and name as a cause we pick out and name as one conceived to be external to the effect which follows on it. If we did not do so we should be unable to draw any distinction at all as physicists. We are dealing with what is akin to the externality to each other of the symbols with which the reflection of the mathematician concerns itself. But in the case of ends this is otherwise. The end is immediately present. It operates

ab intra rather than *ab extra*. In this respect it is more akin to consciously purposive than to causal action. The parts of the living whole behave more like the citizens of a state than like the molecules of a substance. The organism lives by continuing to realise an end even through progressive and complete alteration in constantly changing material. It takes in from its environment, and gives out to it in a fashion in which continuity is unbroken, and in which its form is modified by the fulfilment, not of some external law, but of a law which it appears to impose on itself. Its change of form takes place in accordance with characteristics which it inherits, and which cannot be adequately expressed in mathematical or physical terms, and its whole life is one which is self-determined in a development or behaviour taking place in the interests of the species to which it belongs, and to subserve the ends for which it comes into existence and, after it has run its course, dies. It is only in terms of life itself that life can be expressed, and these terms lie outside the words which the physicist has to employ. Of course physical and chemical conceptions have great value in the observation of the organism. They are needed in order to interpret certain aspects of the taking in and giving out of its energy, aspects which it presents in common with the other objects of external nature. But such aspects are never adequate to the full reality. They are not more than abstractions, under which that reality can be properly regarded only if it is remembered that in them no complete or even sufficient account of life is ever given. An end operates quite differently from a cause. Its activity is a present activity, *behaviour* and not causation. Our knowledge about it is determined by an entirely different set of conceptions.

But just as relativity is the characteristic of the conceptions of the physicist, so is relativity characteristic of those of the biologist. When we pass to the order of phenomena that are mental, such as those of the animal that consciously reflects and carries out a defined purpose, we have something before us that is of an order in thought different both in logic and in fact. In the organism the end is never realised perfectly. The contingency that is so prominent a feature of nature seems to contend with it. Even in the living human being disease and physical feebleness interfere

with his life. They impede the lowly and the great alike:

> "What hand and brain went ever paired,
> What heart at once conceived and dared."

But not the less the distinctive quality of mind is to be free and self-determining. To this subject we shall have to return later on, when we consider how mind expresses itself in external form. For the moment it is enough to say that thought as such is not only incapable of restraint save by itself, but is untrammelled by the physical limits which confine the organism in sensation. It is of the nature of mind that the entirety should be implicitly present in every detail of its activity. The whole is in the part and the part in the whole, in a fashion which has nothing quite resembling it in the phenomena that belong to the domain of biology. Every thought, however trivial, really implies the whole of our mental content.

In what sense mind is to be treated as relative in knowledge we shall see in time. For the present I will only say that knowledge discloses itself as of degrees and at levels which are determined by the character of the concepts it employs. But these degrees and levels imply each other. They are not distinct entities apart. They are all of them required for the interpretation of the full character of reality. To them one may apply an observation which Professor Eddington makes at p. 82 of his book about nature:

"We have neither the vocabulary nor the imagination for a description of absolute properties as such. All physical knowledge is relative to space and time partitions; and to gain an understanding of the absolute it is necessary to approach it through the relative. The absolute may be defined as a relative which is always the same, no matter what it is relative to. Although we think of it as self-existing, we cannot give it a place in our knowledge without setting up some dummy to relate it to."

In the same fashion, if we wish to get at the ultimate character of the knowledge that is foundational of reality, we must take account of all the degrees and levels at which it appears and interpret them according to their places in the entirety.

We may now turn to the general field of knowledge in order to see whether it accords with the principle of relativity to which an extended meaning is thus given. In later chapters we shall have to approach the subject in more detail. For the present it will be enough if we find that the characteristics of our experience are such as to require investigation from the point of view just indicated in outline.

It is to be regretted that the title " theory of relativity " was ever appropriated to the extent it has been for Einstein's doctrine, just as if it belonged to that doctrine in a special way. What he is concerned with is relativity in measurement in space and time only, and relativity extends to other forms of knowledge as much as to that merely concerned with quantitative order. The different orders in experience appear to imply, as determining their meanings, conceptions of characters logically diverse, like those of mechanism, of life, of instinct, and of conscious intelligence. The principle of relativity applies to all standpoints determined by conceptions appropriate indeed to particular orders of knowledge, but thereby of a limiting character. It seems therefore accurate to regard quantitative relativity as only a special illustration of a wider principle.

I thought it well to begin with the Einstein theory in its general features, because that theory reminds us admirably of the profound extent to which we may all of us be shown to have submitted unconsciously to the rule of what is only relatively true. It may well be likely, even if Einstein is right, that we shall continue for a long time to talk about weight and gravitation influenced by old conventionalities. It may happen that the man in the street will hardly cease to resent the notion that when his umbrella falls from his hand into the mud, what has in truth happened is such that he and the pavement may be treated as moving with accelerating energy in an upward direction, while the umbrella, having no accelerating push communicated to it, remains unaccelerated until the moving pavement hits it. He may stick firmly to his familiar co-ordinates and system of reference. But science cannot stand still to listen to his remonstrances, and for physics it is possible that a time may arrive when even the good old name gravitation will not be discover-

able in any respectable textbook. Science has been able to place to its credit in the past revolutionary victories not less confusing. After all Galileo and Einstein have been the authors of commotions nearly equally impressive, and now every child at school thinks easily in Galilean co-ordinates in a fashion which would have confounded even the learned of an earlier and Ptolemaic outlook.

All this illustrates once more how closely mathematics, physical science, and the inquiry into the ultimate character of reality which is called metaphysics, are related to each other. Much of recent progress in knowledge has consisted in the bringing to light and elimination of unconscious assumptions, and this progress in determining the true character of reality has required, as indispensable to it, the ascertainment of the limits of the various forms of that knowledge which is ultimately one and indivisible. Capacity for imaginative range counts for much; and to art and to poetry science owes a great deal for their stimulative effect on this capacity. It is under a debt of gratitude to the Renaissance, and without such visualising minds as that of a Leonardo da Vinci it might not have stood to-day where it does. But if science owes something to art, it owes not less to the investigations of great metaphysicians like Leibnitz, Berkeley, and Kant.[1] For it is men such as these who have done most to initiate the process of bringing to light the unconscious assumptions which have deflected even careful observation. Thus to-day it is largely due to the influence of idealism in metaphysics that biologists are breaking away from the dogmas of an exclusively mechanical standpoint, and are boldly claiming to interpret and express life in terms of conceptions that belong to the order of life alone. We have analogies to this process in art and in religion. The truth of their ideas depends for the mind that is concerned with them on what belongs to orders or levels in reflection different from those which dominate in science. Faith may well be the substance of things which science cannot see, if its implicit categories are categories really belonging

[1] On the work of exploring the history of the contributions of philosophy to the foundations of science as affected by relativity, it would be superfluous for me to enter. For this work has been excellently accomplished by Professor Wildon Carr in the acute essay on "The Philosophical Principle of Relativity," recently published by him.

to other orders in knowledge and reality. The principle of relativity applies here also, but even more sweepingly. The demonstration of the importance of the principle which the mathematicians and physicists of to-day are offering is helpful, but it covers only a fragment of the ground. Fully operative, the principle teaches us that observer and observed always and everywhere stand in relations which are inseparable in logic as they are in fact. The conception and the conceived are alike embraced within a greater and foundational actuality. Behind knowledge we cannot penetrate in our search for reality. But knowledge is not always of the same kind. There are everywhere in it what are analogous to the differing frames of reference of the physicist. The degrees or stages in knowledge generally, as distinguished from that of measurement, are even less reducible to each other's terms than these "frames," for every form of the latter can be expressed in the terms of a calculus. But life cannot, as we shall see, be expressed in terms of mechanism, or intelligence in terms of life. The orders in thought are of logically different kinds, and they have no relation analogous to equivalence in quantitative order.

The importance of beginning the consideration of the whole subject with the principle of the relativity of measurement lay in this, that in mathematical physics we have a demonstration that is convincing by its justification from the use of external standards. There we are dealing with what we can see or touch, to the extent that we start in every case from results given by the clock or the balance and the measuring rod, and in the end return to them as our tests. The co-ordinates of our systems of reference depend on what presents itself as direct experience of relaions in space and time.

But in the case of knowledge in other forms the primary reference is to standards of a wholly different order. The reference in our experience of the living organism is to a whole that has no existence outside of or apart from the members in which it realises itself, and in so realising itself controls them. They have no existence as living members excepting in and through it. Means and end do not fall asunder ; there is no feature resembling action at a distance, nor is that whole in the conservation of which life consists any cause distinguishable as an event apart

in space or time from the results of its self-conservation in its organs. To be organic imports the fulfilment of an end. That end is in mere life no conscious purpose. It is a final and self-contained form of reality. But it is that in the light of which the living organism is recognised as being such, and is interpreted. In this significance it belongs to reality, and without it such reality would not be. Mind finds meaning for itself in it in a form and at a level which is just thus describable and only so describable. For it is a form which is ultimate. It belongs to the actual and is not resoluble into the conceptions which lie at the foundation of less concrete forms of our experience. Like the co-ordinates of the physicist it is a conception of reflection, and a conception that is foundational, but only to what is known through it and as disclosing it in actual existence.

In this respect there is a real analogy between the system of reference of the physicist and that of the biologist. But the reference of the latter is not to an external standard, as in the case of the former, although the reference is in both cases conceptual. The difference is that the conceptions belong to different stages in the forms in which mind recognises its own character in its object.

Mind, in the fullest meaning, the meaning in which it is foundational to reality, thus discloses irself at a variety of levels which we shall have to consider as we proceed. It certainly imports more than can be expressed in the terms of any set of conceptions appropriate to only one of these levels. It is that in terms of which all forms of reality can be expressed, but which itself can be expressed in no terms beyond itself. Within its entirety there are various conceptual forms, which show themselves as forms of general application. As such they are disclosed, like the space and time systems of Einstein, as belonging to the facts of reality and of knowledge alike. They represent levels or degrees in knowledge which have relations to each other, but they are not reducible to each other. For they are ultimate, alike in conception and as expressed in concrete and actual facts that are not facts apart from them.

Let us for a moment again approach the question of what is meant by truth. It is plain that it may involve more than any merely fragmentary view of the actual.

In all its forms knowledge is ever seeking to complete itself, and it refuses to submit to stop short of the ideal which its nature imposes on it in each of these forms alike. Truth must imply the whole and nothing short of the whole, whether the whole be actually and fully attainable by the human mind or not.

This, as we saw, has proved to be the case in physical science. The doctrine of relativity made the ideal apparent in a fashion in which it was not before apparent. We are now conscious that the co-ordinates by which we usually measure are always relative and never absolute. The calculations of the astronomer have to take account of more factors than used to be dreamed of. So it is in pure mathematics with number, which is now found to mean more than merely what can be counted. So with series, which depends to-day, not on definite quantity, but on logical order in externality. The old concepts current in science are everywhere turning out to fall short in the interpretation of the actual, and we begin to recognise that what we have been treating as actually ascertained facts were only our working hypotheses, fashioned sufficiently for the immediate purpose, but wholly inadequate to the full presentation of complete truth. Every particular form of knowledge is relative, and is destined in the end to recognise the boundaries of its own apparent order, and to demand that we should pass over to conceptions of a new character.

What is impressive, even in the cases of mathematics and the physical sciences, both of which are concerned with externality and quantity, is still more strikingly illustrated when we turn to the sciences of life, such as animal physiology, botany, and biology generally. Here the methods of exact measurement, brought forward for application from the regions of physics and chemistry, are no doubt of a utility which is indispensable. For we are still dealing with phenomena that belong to an external world, in the sense that they possess relations which require such methods for their investigation. But these methods are not the only methods we require in this region of phenomena, nor are they by themselves adequate. The facts with which we are concerned appear to belong to an order different in kind from that of the conceptions of physics and of chemistry, alike as regards our knowledge

and as regards reality. It is only by abstraction, by shutting out from attention certain aspects of what we observe, that we can employ these conceptions. Their employment is necessary, but it does not give us more than relative and partial truth.

Thus we find that if we are to describe intelligibly the facts of heredity, of the transmission of modes of behaviour, and of the development and growth through a definite course of life of an organism, from the union of a spermatozoon with an ovum in order to form a new and progressively independent organism, we must employ other terms than those expressive of causes acting *ab extra* on materials external to them. We pass naturally, if we observe without distorted attention, to the notion of life as the self-realisation of what we may call an end as distinguished from an external cause, an end which is a moulding influence immediately present and not acting at a distance; an end which conserves itself and remains continuous and identical notwithstanding its constant change of the material in which it expresses itself. The human organism is always parting with its carbon, its oxygen, and its other chemical constituents. It is continuously taking in fresh substance from which to derive supplies of energy, and then setting itself to eliminate the waste products when their function has been fulfilled. But it behaves as a living whole, self-conserving throughout metabolism and change of material, and it pursues a definite course, first of growth and then of decay, from its conception, through its birth, to its maturity and final death. The individual inherits and maintains the distinctive characteristics of the species, and when it has fulfilled the function of bringing into life through birth descendants to whom it transmits its own capacities and qualities, it passes away in the interests of a larger whole, that species whose own ends and whose own continuance it subserves. During life it conducts itself, not like a machine, but with vastly greater delicacy. The work done by the blood corpuscles in taking up just the necessary oxygen and no more; by the kidney in selecting out and secreting injurious substances which it gets rid of in the urine; by the tissues in the metabolism by which carbohydrates are converted into glycogen; these and countless other phases in the activities of the living

organisms are no mere illustrations of mechanical or external causation. They are more nearly analogous to what arises from the actuating spirit of a battalion which has been highly trained, where the men combine almost instinctively in carrying out the common purpose, ordered by a word of command and responded to as only a collection can respond which is no mere collection of individuals, inasmuch as it forms a practised and cohesive social unit.

Yet the organism that is merely living does not really act, as the battalion does, purposively or even instinctively. It acts only *quasi*-purposively. What controls it is not conscious purpose, reflectively selected, but what belongs to an order that is more than mechanical but is short of being intellectual. When we contemplate the living world we are contemplating it at the level of end as distinguished from causes on the one hand and from conscious purposes on the other, and our conceptions are those of a definite and special order.

There are, of course, many features by which end is distinguished from purpose properly so called. The mere end is not the less actual because it is operative wholly apart from consciousness. It selects, but its selective activity is not free for it, and does not depend on knowledge. It acts as though it discriminated, but its discrimination is merely analogous and no more than analogous to choice. The kidneys keep constant the purity of the blood from noxious substances with the utmost exactness in adaptation to circumstances, and with a precision and delicacy that suggest self-directing intelligence in selection, more than they suggest merely chemical processes; but they really effect this regulation because, although they do not carry out any conscious purpose, they are living members of an organism whose end and whose existence in the conservation of that end the kidneys live in continuously subserving. For apart from their place in this whole they do not continue to live. They have a special and definite place to fill in a community of organs, and excepting as filling this place they are not kidneys. It is in the particular end which they fulfil that their life and identity consist, and this end it is that requires constant change in their substance.

Now the conception of end, as we see it embodied in life, is, as I have observed, *sui generis*. Reduce it to mechan-

ism, or exhibit it as intelligent choice, we cannot. Life belongs to an order of phenomena which can be observed, interpreted, and expressed only in terms of the conceptions of their own order, that of life. This is where the principle of relativity comes in. The actual, where we find it alive, belongs to a level just as truly real as that of the machine. The living organism owes what it is, not to the control of mechanical causes operating and moulding it from without, but to the *quasi*-purposes of which it is the embodiment, and which are everywhere and at all times present in its life. Action at a distance in such circumstances presents no problem, for the control is inherent and has its place as belonging to the present character of existence. The organism seems as though its members were fulfilling an immediate end, which is not the less now actual and immediate in influence merely because its fulfilment may require a course of time in which to accomplish its full development.

When we turn to the higher kinds of organism which embody more than life, inasmuch as they exhibit consciously intelligent selection and freedom of choice, we are face to face in our object-world with a yet more concrete order of reality, that which belongs to mind as it confronts our own minds in the world before us. The intelligent animal, the horse, the dog, the human being, are all, at their own stages, the manifestation of mind expressed and consciously directing itself in the action of an organism which is thus more than a merely living organism. We have passed beyond the stage of mere ends in process of accomplishment to one in which differences in level of a new order become apparent. The order is again, in logic and in quality, a new and distinct one. The intelligent organism may in certain aspects be treated as a machine, but it has other aspects certainly not less actual in which it is more than a mere machine. Even when we describe it as alive, we have to describe it as much more than alive. For as actual it embodies mind, and it therefore not only controls but selects in accordance with purposes exhibiting values of varying character, with qualities that belong to self-conscious intelligence alone.

A new and large problem about the nature of reality thus confronts us. How are we to explain the fact that the actual exhibits itself in orders which are irreducible

to each other? This fact seems to be staring us in the face, and recent progress in scientific research appears to be intensifying its definiteness and importance. The old idea that somehow science was likely to end by exhibiting all difference as merely quantitative difference is growing remote. The principle of relativity in the orders of existence is fast acquiring a new and largely extended significance, going beyond what relates merely to order in quantity and the concepts of that order.

It seems hopeless to try to build up the explanation from below. Morality cannot be reduced to mathematics, and no more can life be resolved into mechanism, or reason into mere instinct. It is safer to accept what appears to be unmistakable fact of observation, and, if light is to be cast upon it, to seek that light from what is nearer to actuality, as being more complete in the way it lends itself to explanation, rather than from what obtrudes its fragmentary character.

But how is this to be justified? Some of the New Realists, well aware of the difficulties, have suggested an answer to the question. What distinguishes their position from that of the older forms of realism is that they project universals into the non-mental world. Later on it will be necessary to consider how they do this. At present it is enough to refer to the fact that they do so. They treat the non-mental world which for them confronts the mind as something from which the latter is receptive, and receptive, not merely of what is in the nature of the particular, but also of universals and relations that find their meaning through our reflections, but are not the less treated by them as truly there. These are regarded as independent and non-mental objects, and yet as of a general character in relation to applicability. But if this be so, what remains of the mind that perceives? It becomes like a substance on which impressions are causally effected by other substances outside it in time and space. Only among the causes which thus produce consciousness and perception seem to be the very universals we have hitherto taken to have significance possible only as belonging to the nature of mind itself, and not of externality. Physical causes are so extended as to include entities akin to Ideas as Plato conceived them.

But why should we treat the phenomena of mind as

the effects of a cause? If it be claimed that we come to such a conclusion inasmuch as it is the only one adapted to scientific methods of treatment, the answer is that this is due to an assumption which has long been complained of, and which modern scientific methods do not entail. The principle, even merely physical, of relativity appears, indeed, to impel us towards a different view. There is for it no bifurcation, and no fixed or rigid framework, such as the Newtonians dreamed of. There is rather a universe which is what it is for us only in virtue of variety in interpretation. Its reality and its meaning are not separable. General conceptions in observation come in everywhere. It is mind and the significances which it finds that make that universe what we take it to be, and the relations of the objects within it are not fixed or independent of these objects, but are the results of our interpretations. The doctrine of relations independent of and external to what they relate seems thus to fall into difficulties.

At this point I wish to guard against misapprehension. The equations to which I have earlier referred, and the relativity which arises from them, are not for the new school of physicists merely individual equations. They are inherent in all experience, and are conditions that lie at its foundation. I can best remind the reader of this by referring him to Kant's teaching in his *Critique of Pure Reason*, although what he there said may prove only a step towards an adequate explanation of the true relation of knowledge to the universe.

What Kant did was to insist that experience was not reality apart from its signification. He distinguished between the particular self, the self that appears only as a particular object in experience in time, and the foundational activity in knowledge which made even this experience possible. Scrutinising such experience he said that it was intelligible only on the footing of taking knowledge as being more than merely individual, or as an instrument used by the individual. The object-world within which the individual himself emerged was intelligible in its reality only if the individual knew through the expression in him of what Kant called the "synthetic unity of apperception," operating in various modes of activity called categories, and schematising its activity in forms of space and time which were imposed on the

object-world as the conditions through which alone it could arise. In this sense they were transcendental to experience, in so far as they stood for limiting conditions, but not transcendent in the sense of enabling us to get beyond it. The activity of mind was thus no activity which could be regarded as an instrument wielded by the individual whom we know only empirically as an object in knowledge. For it was only through such activity that even he was there as object.

So with the new school of physicists relativity belongs to the very nature of the object in knowledge, and does not lie in any mere employment of knowledge by a particular individual. No doubt all knowledge is in a sense relative. As individuals we are deflected everywhere by what distinguishes us as individuals. Our personal habits of mind and even of body, our social purposes, the limitations of our individual faculties of sense-perception, our want of mental training, these and other idiosyncrasies all hamper us in analogous ways, and deflect us from attention to aspects of what is real, but does not serve our immediate purposes. We may, however, suffer in common from such defects without their belonging to the conditions of knowledge itself. Theory and practice, reflection and volition, are closely related in the fashioning of individual experience. But these personal aspects of relativity are not what either Einstein or Kant has had in view. What they have been concerned with are the conditions of experience in general, and not merely personal conventionalities. If Einstein's foundational conceptions of end-points and their relations, and Kant's description of the transcendental character of knowledge in general, are open to the comment that even to these the principle of relativity extends, it is in a deeper sense than that in which we pronounce the outlook of the individual to be relative to his individual peculiarities.

How the great and fundamental fact of knowledge is to be accounted for is a question that is constantly being raised. But it is inherently an irrational question, for the fact of knowledge is presupposed as ultimate in whatever shape the question is put. When we raise points about how knowledge is put together we are raising points about a foundation which our own very questions presuppose for their possibility. We are of course entitled to

inquire into the growth of the faculties in the individual, and the genesis of its psychological forms. This is part of our study of nature as taken in abstraction. But psychological knowledge is always relative. It is the outcome of the employment of a particular standpoint, and of a set of conceptions which can present what is observed only as it appears as it exists from that standpoint.

This is true of our knowledge of the particular self that knows, looked on at arm's length, as an object in the world of experience and with a history there. But it is equally true of our knowledge generally. Even the point-events of Einstein, with their intervals, and the apparently absolute equations, depending on co-variance for co-ordinates of every curvature, do not present themselves as necessarily final. And going more widely afield than Einstein has done with his investigation of the conceptions under which we measure, we come to the partial nature of those other conceptions through which we determine the orders of reality at levels of a wholly different kind. There too the truth we reach is not the whole, for beyond it lies an entirety of knowledge in which each order with its own forms has its place, but no more than its place. To this topic we shall have to revert later on. Meantime it is enough to remark that relativity seems to prevail everywhere. That is because we are human and finite, and cannot visualise the entirety, or even take it in abstractly excepting by making abstract distinctions in our reflection. But that entirety remains as the ideal standard for our thought. How art and religion bring us apparently face to face with it we shall see. But for thought with its might, not less wonderful because we think only in general conceptions, the ideal completion is not the less present notwithstanding that it seems to be always beyond. We gain and keep our freedom and our science in the constant struggle to be true to the principle which it imposes on us, finite as we are.

It is hardly surprising that there should be a point of approach which leaves the objective universe to be regarded as what exists independently of the particular perceiving individual, and yet admits of the application of the principle of relativity in its widest form. It has been customary to look on knowledge as an instrument which

the mind makes use of in apprehension. But is there not a wider view of knowledge, in which it is foundational of both apprehension and what is apprehended? From such a standpoint the ultimate signification of reality would be inclusion of its "concrete universals" within a whole outside of which there lay no meaning for the word existence. The distinction made between subject and object would import, not a relation between two independent entities, but a distinction made by knowledge itself within its own field. Knowledge signifies, when so regarded, not a special form of individual activity, the subject of a particular science of epistemology, but the ultimate and final fact within which fall object and subject alike. Mentalism fails because it hypostatises one aspect within the entirety of this fact; realism, because it exalts into an independent existence another aspect. Neither has any intelligible significance apart from the other. They are correlatives, the necessary outcome of the essential character of mind, always active and never inert substance. Substance, indeed, can itself be no more than a particular category which intelligence employs in bestowing on part of the field of its objects a meaning that is of the essence of their reality. The difference between idealism and realism thus disappears in the larger outlook that embraces the difference itself.

The point will of course be made that knowledge is always for us the knowledge of a finite individual. No doubt it is, but it is equally true that it is at the same time always more than this. By its very nature such knowledge tends to bring itself at every turn within a larger entirety, and it is only in so far as it does so that his knowledge is possible for the finite individual. If its range appears narrow, it is not because knowledge is narrow in its nature, but because of the hindrances due to the organic form in which human experience finds expression. The knowledge of such a human being conditioned by his organic conditions we call his experience, and it is plain that what is thus described, however much it may point beyond itself, is a finite form of knowledge. What is obvious is that there is nothing in any particular experience, and equally nothing conceived as lying beyond it, that has a meaning excepting in terms of knowledge. And if existence be only one of these meanings, then to be known in some form is the only

way of being real. To be known, I repeat, not as if through a window, by a mind that is *merely* organically conditioned, but as by mind that signifies the system to which the finite intelligence and its object-world alike belong.

Now the connection of this view of knowledge and reality with the doctrine of orders or degrees on which I have already touched is obvious. It is only a world embodying the principle of relativity, in the form which the doctrine entails, that can be said to exhibit the character of mind, with its exclusion of disconnected fragments and relations. The doctrine of degrees negatives the attribution of this fragmentary nature to the universe, and exhibits it as embodying in a self-completing entirety a plurality of orders in existence as well as in knowledge of that existence. All that is actual discloses a variety of aspects. The living organism exists, in ways in which it may legitimately be so regarded, as a system of matter and energy conforming to physical and chemical conditions. It exists so if abstraction from its other and dominant phases is made under the guidance of conceptions of a mechanistic order. Excessive concentration of attention in applying such conceptions gives rise to the abstract view called materialism. But materialism furnishes no account of the facts of life or of consciousness. These belong to other orders, which what lives and knows presents both in reality and for adequate knowledge. It is only in terms of conceptions belonging to these other orders that what is living and conscious can even be described.

Still, it is true that for the advancement of knowledge of other kinds about the living organism the abstractions of physics and chemistry are of high and indispensable value. They serve the biologist as mathematics serves the physicist. The more abstract the conception, the more completely are eliminated those details that are for the purpose of the moment irrelevant. It is by this kind of concentration, with its consequential exclusions of other aspects, that exactness in reasoning and measurement is made possible for us who cannot do everything all at once. And so far as the process extends it is legitimate, because the actual always presents more than one aspect. But the whole truth, or even adequate truth, it never gives. The principle of relativity, in a wider meaning than that which is usually attached to it, applies throughout experi-

ence. Not that every object presents for what we call direct apprehension every possible aspect. A piece of iron does not live. It has an actuality that appears to be purely physical and wholly independent of our knowledge about it. And yet this is only a rough working view, which suffices indeed for practice, but not for science. The ultimate atoms of iron of which it is composed we cannot reach, nor, if we could, would they have for science anything approaching to finality. The question would then arise how they were related to what appears to lie beyond in the structure of reality, to the ideal electrons through the energy of which in the magnetic field we approach to the constitution of matter. Thus our piece of iron turns out to be, as it presents itself in what we call the actual world, a phenomenon belonging to knowledge indeed, but to knowledge only at a stage in the complete self-relation of its phases.

Taken from yet another point of view the relativity of our experience of the iron becomes no less apparent. Its colour, its weight, its taste, its size, its general appearance might present themselves quite differently to beings of another kind, with senses other than ours, or in a different world where the limits of visibility in space and time were different. Relativity comes in here also. Knowledge is indeed taken to be of the actual, but then the actual turns out to be profoundly dependent on the character of knowledge itself. Pragmatism, the doctrine that the view is true which works, inasmuch as it harmonises with the context of experience, is often put forward in extreme and exaggerated forms. Yet it has some justification. For it is only when we take as our final standard an ideal that is in itself never completely attainable by us, the ideal of knowledge in its entirety, that we have as against pragmatism a tenable conception of a final standard of truth.

Thus knowledge and reality again prove to be distinguishable only by abstraction made for practical purposes. They are not separable, in the fashion that is commonly imagined, for scientific knowledge in its fulness, and the case of the nature of iron is just an illustration of a wider form of that principle of relativity of which the doctrine which Einstein has made famous is an illustration of another and different kind.

If this be so the question which again arises is in what

truth consists. As has been already pointed out, the agreement of an idea with something external and independent of it is too limited as a standard to cover all the facts. The essence of truth seems to lie rather in the adequacy to its object of the idea in range of quality as much as of quantity. Since everything that is appears to stand in relation to all else that is, a perfect idea would have to comprehend the entire universe. Now no such idea is possible for the human mind, the mind that is conditioned in that it has to work through senses and a brain. Our standard of truth as human beings must therefore fall short of this ideal, and be just a working instrument with the aid of which we seek to travel towards the interpretation that is complete. But the old notion of apprehension and its object alike as of static character has vanished under scrutiny. Knowledge is dynamic. It is an effort to transcend the apparently given. It is always pointing beyond itself. And with the continuous advance towards fuller comprehension the object itself loses its apparently given character. It, too, is dynamic in its nature. That is the underlying principle of relativity in its wider form.

Within their own orders in knowledge and reality, and subject to our recognising that it is only with truth belonging to these orders that we are dealing, there are methods that are essential appropriate respectively to each form of science. Relations of quantity require the clock, the measuring rod, and the balance for their precise ascertainment. Without these instruments science could not progress. But, as we now learn, it is only what in the end turns out to be relative truth that they can give us. When we deal with problems the solution of which transcends everyday experience, such as those of the constancy of the velocity of light, or the relation throughout the universe of gravitation to inertia, we come up against the demonstrated relativity of everyday standards of measurement in even their apparently most exact forms. Mathematics, which can speak in a language more comprehensive than that in which the mere observer describes what he sees, enables us to express the limitations which the subjectivity of the latter forces upon him. But not the less the physicist must use the clock, the measuring rod, and the balance, and cannot get on without them. For his purpose is to acquire ideas that fit in with the context of experience,

not only his own but that of other men, and this his measurements enable him to do, because, although the results are limited by the general conditions of observation, these conditions apply to the others around him who have experience analogous to his own. What he has to be careful about is to remember that his and their experience as an entirety contains aspects belonging to differing orders and conceptions, and that what applies to its reality under one head does not apply to its reality under another. The chemist and the poet may be helpful to each other, but very often they may be the reverse of helpful.

Now this is intelligible if apprehension and its object are regarded, not as independent entities, but as phases separable only within the domain of mind and as distinctions made by it within its entirety, an entirety which contains as belonging to itself object not less than subject. This is what is meant by speaking of mind or of knowledge as foundational. Knowledge is in none of its aspects, the most discursive reflection or the barest awareness, a causal process taking place between two independent entities. The object and the subject that knows fall alike within a single system and have reality only in its terms. Outside and apart from it they have no meaning. Facts are not isolated and independent fragments. Whether we look at the scientific phases of the principles of relativity, or at the wider application to the content of experience of the principle as the historian or the moralist applies it, this is apparent. Much of the confusion of thought which has beset philosophical investigation has arisen from the assumption that knowledge is an independently existing instrument to be wielded and applied *ab extra*. It is not so, even for the physicist. Much less is it so for the historian who, in order to reproduce a past that lives in the present, has always to re-interpret it, and to abstain from trying merely to photograph imagined fragmentary occurrences which are not in their truth fragmentary or self-contained, but are intelligible and actual only in the context and significance which are brought out by the work of intelligence. The truth, here as elsewhere, is always more than it seems at first sight to be. This does not mean that there is not a most vital and genuine distinction between truth and error and between fact and fiction. But it does mean that only by abstraction do we fix our

conceptions of things in forms that do not permit them to pass, in virtue of the dynamic character of that which renders these things what they are, beyond the ideas of the actual that work in practice only because they are adequate at the level which is all that immediate practice requires. The whole truth lies beyond these working conceptions, but only in the light of standards and orders that belong to the higher levels in knowledge to which it points us is it necessary that our working conceptions should be qualified and their relativity insisted on.

We have here reached a point at which we must no longer dwell on general principles, but have to pursue the investigation in detail. It will be convenient to begin with a scrutiny of what we find in the individual self, and to endeavour to determine the relation of the self to what it perceives.

PART II

THE METAPHYSICAL FOUNDATION OF RELATIVITY

CHAPTER VII

THE SELF IN KNOWLEDGE

THAT I am aware of a world surrounding me, a world moreover that includes within it myself who am aware of it, is a fact that is obvious and yet extraordinary. So obvious is it that rarely does the significance of this fact cross the threshold of consciousness sufficiently to have attention directed to it. Seldom does the circumstance that I know awaken any question as to what that implies. But none the less, if I do reflect on it, the fact is a strange one. For when I think of myself as looking at the world around me I become aware of myself as a physical organism, a kind of thing that occupies a seat on a chair, but a thing that seems also to have an extraordinary property, that of exercising an activity called knowing. This activity appears, moreover, to have breaks in it. When I shut my eyes I cease to see, and this confirms for me the off-hand impression I form of knowledge as a process taking place *within* the world. And yet the world has no meaning, except for knowledge itself, and in the terms of that knowledge.

But at this point difficulties surge up. For when I think of what sits on the chair and opens and shuts its eyes, I observe that it is a living organism with nerves and a brain. And it seems that it is the stimulation of these nerves by influences coming to them from outside, through the eyes and other organs of sense, which causes the sensations that arise in the form of responses made by the brain. It must therefore be out of these responses that I really put together my knowledge of the world outside me, not less than that of the body itself upon which that knowledge depends.

However, this explanation only lands me in fresh perplexities. For my experience assures me that the world

outside and my body also are there, whether I perceive them or not. I am dependent on that world for my very existence, and I am dependent, at the same time, on my nerves and my brain for the significance of the world on which I am thus dependent. What I perceive must have existence apart from my activity in perceiving, especially if this last be only the responsive activity of the living being that is aware of it. The activity and its object cannot be the same. But, on the other hand, I find myself no nearer an explanation if I take the full plunge, by saying to myself that my response to stimulation when I perceive is only the effect in a causal process in which the environment acts on my nervous system and indirectly on my cerebral hemispheres. For it is just in terms and within the medium of knowledge itself that such causes have even the slightest meaning for me. Now if they had no meaning at all for me that would be as much as to say that they were nothing and were not. I must therefore go back on the steps in my hasty reasoning, and try to find out at what point my difficulties have commenced.

These difficulties seem to have arisen as soon as I fixed on the notion that my mind was a kind of thing, and that knowledge was a property of this thing. It seemed plausible to think of looking out as it were through a window. But was I right in framing such a notion? Is my mind really a thing at all? Is not its nature more akin to a system of continuous interpretation, within which all that is, was, and can be falls, and is not knowledge just such a system, and as such the final fact? If so, knowledge is quite different from any property of a thing. It is rather in the nature of a medium to which every form of existence must be referred. In particular it does not seem clear that reality can be divorced from meaning. Knowledge appears as if it were no static thing, but actual only as a dynamic process, differing altogether in character from any between outside objects. For it creates its own distinctions within itself, and excepting through it and in its terms there is no intelligible significance to be found for either the self that knows or for the objects to which it is related. Knowledge may thus turn out to be the *prius* of reality, and, like the *Élan* of Bergson or the "Will" of Schopenhauer, itself the ultimate reality, capable of expression in no terms beyond its own, inasmuch

as creation is meaningless outside its scope. Things and our reflections on them must alike belong to it. If, indeed, the *Élan* or the "Will" is intelligible it can, in this view, be so only as the result of distinctions made within knowledge of some sort, and it must fall within it as its own mere form and not as reality independent of it. It may then appear in the end that it is only by what is called abstraction, by a separation made in reflection for limited ends and standpoints and of a secondary and provisional nature, that knowledge has ever come to seem to be anything else than a foundational fact, the ultimately real that can be rendered only in its own terms. If this is to be so we shall have to interpret knowledge in no narrow sense. It will have to extend not only to notions but to feelings, so far as these are really distinguishable forms within it. Knowledge is not an object that is for me, any more than I am merely an object that is for knowledge. No doubt I can look into what I call my mind and represent it as something held out for scrutiny. But in so doing the distinction I have made seems to have distorted it, by leaving out of notice the fundamental fact that its own activity is itself the preliminary condition to this process. A living being that knows seems to belong to an order quite different in kind from that of one that merely lives without knowing. For the first, even though restricted by physical conditions, gives meaning to and has present to it the world within which the second has only a place.

Perhaps I may be able to make what is thus being forced on me plainer to myself if I try to analyse what is really going on with me at this moment. I am sitting at a table near a window which looks out on a park in London. Before me is a multitude of objects quite different in character. There are the iron railings of the park. In front of them is a roadway, laid out mechanically, but so as to give effect, just as do the railings, to human purposes. The designs have been imposed externally by craftsmen. Along the road there move motors, again fashioned by artificers to embody designs. Then there are horses, which are living, and therefore very different from the motors, although they also draw loads, to which work they have been trained in the service of man. Within the railings there are trees and plants, which are living organisms of one nature, and also birds and dogs, which are living organisms

of a different nature. The birds as they seek for food, and the dogs as they watch and follow their owners, show something which the vegetable organisms do not show, something that resembles the intelligence of which I am aware in myself. Turning my reflection on to that self, it seems to present many aspects and degrees. My hands and feet, my habits of life, my clothes even, belong to my personality, and seem to be in some sense part of me. And yet I am obviously more than they make up by any process of addition. For I think of myself as "I," and that it is "I" to whom they belong, and what I indicate when I say so is obviously not a thing or even an event. For the appearances of myself, on which I am reflecting as facts, all fall within an experience which is single and indivisible, save through distinctions arising within my own reflection. It has thus the character of an entirety. But it is an entirety conditioned and limited by a specially important fact, that I am the centre in which this experience has its focus, and from which it also, as it were, radiates. And I notice at once that the range and activity of my mind in this experience radiate far beyond what is in contact with me or even close to my living body. My experience is always in course of letting itself be enlarged by the thinking activity of the self. I throw that experience into the form of a definite system, and I rationalise it through thoughts which are not like passing emotions, but are of general and lasting application. I recognise what is so interpreted, a chair for example, as harmonising with my thoughts and as embodying the principles they give me. I rely on the rational character of what I think of as real by passing boldly in reflection to judgments about what belongs to the future and to the past, and to beliefs that concern a world that cannot at the moment be seen or felt or heard. Just now it is noon, and an hour ago the hands of the great clock, which at this moment stand at 12, indicated 11 o'clock. That this was so I am certain, for I assume, what I have always found to be true, that nature pursues a continuous and definite course from the past through the present towards the future. The momentary appearance of the clock I therefore interpret with reference to a past of which I have made an image in my mind based on this conception. It has taught me that the events which I call causes give rise to definite

effects. If the movement of the motor-cars which are passing is to be explained, it is explained, consistently with the context of experience past as well as present, by the presence of petrol which is being consumed in order to convert its potential energy into the kinetic energy of motion. So also I infer that the horses must have been fed this morning, because otherwise I know, from what I have learned on other occasions, that they would be too feeble to draw the waggons. There are houses beyond the park and smoke rising from chimneys, and I judge that there must be social and industrial life where they are, although I cannot see or hear or feel it. For I always interpret my actual perceptions as revealing to me only a fragment of a larger whole which I construct for myself in reflection through ideas of general application, and knowledge about this larger whole can, with a greater or less degree of certainty, be extended beyond it limitlessly into regions still larger and more remote.

When I again bring my reflection to bear on my own self I find something analogous. For my experience of myself contains much more than any mere particular feeling of self. Memory, for instance, enters into it copiously. I am what I was. The future presses on me not less than the past. I shall be what I am, and the purposes to which my will is directed are even now moulding and changing what I am at the moment. What I am now is not abiding. Yet in the changing experience of myself I remain identical. If I am in time, time seems not less to be what it is just for me. Apart from the experience in time, in which I appear as object to myself and conscious of that self as in time, I am not. Yet it is only when referred to its focus in myself that the succession in time-experience is brought together as a single and continuous succession. Apart from the self as the subject in which it is held together it seems to have neither meaning nor existence. Time, therefore, does not appear to be a last word about reality. It belongs, not indeed to me as a mere particular self or subject, but to an object-world that is there *for* me.

It is thus plain that by myself I really mean more than my clothes, or my appearance, or my habits, or the particular contents that are stored in my mind, or their duration. It is rather in my thinking and in the interpretations I make that the key to my distinctive nature seems to lie.

Moreover, the interpretation and the interpreted, though distinguished, are not distinguished save as in common belonging to that nature. What I thus conclude about myself I find that I must conclude about my neighbours not less. For when I turn to ask myself what it is that makes my fellow-men that which they are to me, it appears to be really the relation of their minds to mine.

I see from the window an acquaintance coming down the street. I have to go down to the door and meet him in a couple of minutes, and the sight of him awakens a train of expectations and purposes of the coming interview. What I felt a moment ago before I saw him is what I was then, and my present feeling is continuous with it, but in course of being changed by the notion of the coming meeting. It is plain that my experience of myself is nothing rigidly fixed or remaining the same. It is not static, but self-transforming. What holds the thread of continuity unbroken for me is that I am constantly bringing my experience under general notions, notions that give it more than mere feeling or particular meaning for me, and that I am so reorganising and readjusting it. Just as the inner feelings that fill my consciousness are always unbroken, even when changing, so are my perceptions of what goes on beyond my house. The birds move, and yet I recognise them as the same birds, notwithstanding that they look different. I know that there is a sequence in what I see which takes place in accordance with principles that endure, though what they govern is activity that is always altering its form. Everything around me is in constant course of change, in some cases slowly, like the burning coal in the grate close by me, in other cases swiftly, like the positions of the motor-cabs that pass. What holds my experience to identity in such changes is their principle, resulting in laws which I recognise as operating unbrokenly. I believe in such laws instinctively. I do not doubt that they will continue to hold good. Nor do even the birds or the dogs, which appear to govern their behaviour by the same assumption. Their action is doubtless mostly unconscious, but they act just as though they were following out purposes based on an explicit assumption that as things have been so they will be.

Now however it may be with the birds and the dogs, this is for myself, as an intelligent and reflecting being,

a principle which I can bring clearly into consciousness. It is what gives their significance, theoretical and practical, to my feelings. The feelings themselves would be nothing apart from their setting in reflection. And this setting enables me to pass beyond every apparent particular character they have, and to group them and connect the past and the present in an entirety, thus anticipating the future. I hold myself before myself, and with it the world in which I live and which I look on as surrounding me and including myelf in it, in thoughts which do not pass with time in the way my feelings and sensations do. The most obvious of these thoughts is always that it is I who see, I who hear, I who feel, I who know. The I that does all this is no transient feeling or passing phase of consciousness. It emerges in reflection as obviously more than of a particular and passing character. For I can, if I go near them, hear the other men who pass by also saying "I" just as I do, and they are, as in my own case, obviously centres for worlds of experience of their own. They, too, hold themselves up before the mirror of self-consciousness, and in that mirror see themselves as having the same thoughts as are mine ; I and you, you and me. We are different, not in the principle or character for reflection of the varying worlds of our experience, but in the details. For each one of us to know his world as his own is what we do in common, in our own ways. We cultivate our private gardens, though we cultivate them on principles that resemble. The self that knows is distinguished from other selves by the details of its experience, by its own peculiar surroundings, by its history, by contents stored in memory, of which it is aware if they are reflected on and so made an object for its thinking. But at the foundation of knowledge in all of us is the fact that this is the knowledge of the person that says "I," and that in saying so the person is affirming that, whatever else the world is, it is a world of which he is in some sense the centre and the foundation. It is for thought alone that this is so, for no feeling can be held up to consciousness, excepting by thinking of it as the feeling of a mind for which it is presented.

What the facts appear to disclose is thus that what I apprehend has two constituent factors, its being felt and its being subjected to thought. But these factors are not

distinct processes in space or in time. They belong to different points of view which are concurrent. There is no feeling that does not require for its reality some sort of setting in thought. There is no thought that does not go back to some image depending on feeling for its matter. Thought and feeling, when we distinguish them, stand for us as the abstract and the concrete, the universal and the particular. But although so distinguishable they are not independent existences. My capacity for knowing and still more my capacity for extending my knowledge seem plainly to depend on my so distinguishing. But it is a distinction which does not relate to independent facts. It is the creature of reflection. Yet arbitrary thought does not make things. A dream is in one sense as much a reality as anything else, in the sense that through my imagination it seems for the time to present before me an actual concrete world in which I see and hear. In so far the dream is of the actual. But it is reality only in a qualified sense, for when I awake and resume the possession of my faculties I find that what I imagined to be actual in my dream and felt to be such was not so, but a mere construction by the mind. It turns out, when I try to fit the dreamed of world into my general surroundings, those that include my awakened mind and my body also as apprehended by that mind, that it will not fit in. My organism is a fact in the entirety of my experience, and when I follow out, as I must, that experience as an entirety, I find that my dreamed of position in space and time does not harmonise with what I now think, and what other people are thinking. For I know my world to be real largely because I find that it is presented to me when I fully apprehend it in a way in which I learn that it is presenting itself to other people also.

How do I know what these other people experience? By knowing what they *think*, by distinguishing particulars for reflection from what is general in it. Their sensations I cannot directly experience. These enter only into the private worlds of which they are finite centres, as I am of mine—the worlds in experiencing which they say "I," as in my own case. I only conclude what these feelings must be like through inference based on the analogy of my own feelings, that is to say, by means of conceptions. But thought is no mere succession of private sensations

and feelings. It works with ideas of general application. These are, in so far as they possess the character of universals, in all minds literally the same. Such universals of reflection are not events. They do not, like facts of sensation regarded merely as events, only resemble each other in different minds. They are conceptions by the "I," and are not occurrences in space or time, but thoughts which disclose literal identity in logical significance. Reflection, by the abstractions it makes from what treated as an object is fleeting, seems to us to give the very identical thoughts, so far as they correspond, which the poet expressed in verses composed two thousand years before us. The ink and the words printed with it on paper from which we read present more than a mere aggregation of marks made by a machine carrying out the plan of the printer. What is before us is a set of symbols, the meaning of which we apprehend, and take as indicating ideas that, though those of another person, yet stimulate us into reproducing in our own creative imagination just what the poet imagined. And this is only possible because the words symbolise identities which must therefore be those, not of feeling, but of conception. It is only for an educated mind, exercising reflection which is adequate, that they can do this. For the man who cannot read or does not care about them the words printed symbolise little more than a mechanical row of marks. For the dog who chews the paper they do not symbolise so much. But thought, which can fly beyond the immediate and which reveals identity in its reflective activity, brings before us the self of the poet, and a train of ideas so fashioned by him long ago that they can set our own creative imagination working, and lift it to high levels like his own.

What is true of the poem is true of all the life I look out on from my window. I am constantly interpreting through concepts. It is thus that I get the belief that the people before me see the same sky and the same sun and trees as I do. Into their sensations I cannot enter. But their words and their general behaviour are symbols through which I know that reality is conceived by them just as it is by me.

A great metaphysician, Leibnitz, long ago laid down that because we are shut into our own private worlds, and

cannot feel what others feel, we are monads each with a world of his own, from which the rest are completely shut out. The agreement of these worlds and the harmony of our actions he thought he could only explain by assuming the existence of a pre-established harmony brought about *ab extra* by a Creator. But he overlooked that quality of thought which distinguishes it from feeling. Feeling may be regarded through the power of thought to make abstractions, and to hold out its objects as though they could be private and particular, as having a definite place in time and space, and as such exclusive. When we imagine it as a property of an organism this is easy. But the abstractions of reflection, when they are of the order of universals and harmonise, are so far literally identical. The thoughts they embody are not in any true sense events in time or space. The psychologist may indeed treat them as such for limited purposes. But when he does he transforms their original and actual character. Literal identity in difference is the real characteristic of all general conceptions, gotten though they may be by derivation from what is individual or singular and so far particular. When I follow a proposition of Euclid I think just the thoughts that he thought. The fact that he lived a long time ago, and that the lines which he had on his papyrus are not the identical lines that I see on my copy of his propositions, makes no difference. For I can disregard as irrelevant and abstract my mind from all differences of this kind in accomplishing my purpose, which is to reflect, just as he reflected, in general conceptions. No lines can be drawn on any papyrus or paper that are accurately parallel, but lines can be drawn which will so sufficiently represent lines truly parallel as to serve for symbols of the conception they embody. It is the conception that alone matters for the mathematician. He really deals always with what is general, and never with what is singular, save in so far as it is capable of symbolising what is general, and forming a basis for inference of a general character.

The same thing is true of my intercourse with other human beings. I now meet my friend at my front door. His private and particular feelings I cannot reach. He has an organism of his own, and a world and a history, with an accumulation of knowledge, which are different

from mine. But his behaviour to me and his words are symbols, which, by expressing meanings created in his mind, enable me to judge that his experience has a correspondence with mine that is based on identity in conception and mode of thought. I cannot get beyond my own senses in immediate apprehension. If I did not possess the proper organs of sense I could neither see nor hear nor feel nor smell nor touch. But possessing these, if I were confined to them I should be a monad shut up in a world of its own. It is thought that lifts me out of exclusiveness and that takes me into worlds unknown to merely immediate apprehension because they cannot be so known. And as with me so with my friend. He, too, is a person, an "I" in whom is focussed a world which he reaches beyond and extends only in thought, but in thoughts that in the correspondence of their system with my own are for the general purposes of knowledge and creative imagination identical with them. He who says "I" utters a word symbolic of a meaning which for this purpose is just the same for all of us. It is to particulars that we must look for the differences between persons, particulars which matter from the standpoint of thought less and less the more general the mode of thinking is. It is the same world that is before you and me, and that is because it embodies sameness in our conceptions of it, conceptions which can be extended into detail without assignable limit, but are still conceptions.

Yet, as has already appeared clear, there is no thought apart from its basis in feeling, any more than there is any feeling which is not in some degree set in thought. The world of experience is a world characterised by its implications, implications through which are unified the phases of the dynamic activity of mind in which experience consists. That experience corresponds in all rational beings, however it may differ in regard to their history and their individual peculiarities. It is a whole containing within itself the I who know and the entire field of knowledge, with the conceptual and sentient aspects distinguished within it through its own abstractions. The world that confronts me is as actual as is the subject that apprehends in it its object. It is only the confusion of thought with a property of substance that has given rise

to what has been called the ego-centric predicament of the subjective idealist.

But my friend is a different person from me, and the animals are also living beings, as real so far as they live as I am. What is it that makes me and my friend persons, and the animals separate individuals? It is our own separate organisms and their histories and individual experiences. These differ among themselves. The organism of the man is of a higher character than that of the brute. That of man does not merely live. It symbolises a higher order, that of full intelligence. This is what the human form implies. It is symbolic to us of the possibility of thinking, of remembering, of recalled history, of family and other social relations, apart from which the man whose organism it is would not be the person he is, either for himself or for us. His body is much more than merely living. It means all these aspects and many besides. It is for reflection that this appears, and in reflection, the subject's own as well as that of others, mind finds itself actual in facts that are only from one point of view external. The human body is mind in external form, mind in the meaning symbolised in it. When it dies it ceases to present this aspect or to be mind. It is in virtue of his having a brain that conceives and directs and remembers, so that the past and the present and the future are brought within a single whole, that man appears as an individual, a person in a world of persons. Mind and body are not separate existences in space. The body, taken at the higher degrees of its reality, seems to be mind and to know itself as such. Between my organism and its environment there is no sharp line drawn. There is a constant interchange of material. Life is just the self-conservation of the organism in fulfilment of an end preserved unbroken amid material which is constantly changing. The intelligent life of a person is something yet higher. It deliberately makes use of and controls the environment and moulds it to its purposes through knowledge. It exercises freedom in choice. It is so that we have our station in society, and the world generally, and the rights and duties belonging to that station. The human body is thus much more than mere life. It represents mind and expresses it. It stands for "I," a universal, and in so far we get identity

between one man and another. But the mind so expressed is one that is conditioned by the body. For although it is the body in a higher aspect than that of life, still what we are confronted with is a body that can starve and die, and that has a definite place in space and time, and an experience which is profoundly dependent on its own nature. It is only in so far as it thinks that the body gets above and beyond the natural limits of its physical self, and though in thinking its activity is of a nature wholly different from that of energy radiating from matter, still there is dependence on the body as the organ of its expression. For there is no thought apart from feeling, although there is also, as we have seen, no feeling apart from thought. Now feeling implies a body that can feel, and so does our thinking.

What is the nature of experience ? It is self-expanding. It is always changing. The " This " is ever passing into the " That " ; the " Here " into the " There " ; the " Now " into the " Then." It is through memory and through concepts, such as that of substance, that we give a setting to the object-world as presenting permanent aspects. The nature of knowledge is to fix and give meaning to particulars by universals in which they are set and become realities. It is well to have a term which can be used to describe the two factors which enter into the constitution of experience. The word " factor " is not a happy one, for it suggests action in space and time, and these belong to and fall within experience rather than are foundational to it. If we use the more technical word " moment," as indicating a phase separable in logic by abstraction but not in reality, we may say that in the actual, and in our knowledge of it as it is, there are two moments, the universal and the particular. The actual is the individual or singular, which exhibits both of these as phases united in the dynamic process in which it has reality. Thus the real is always individual, and is never static, and it is a concrete universal which implies mind for its very reality. Nor is there any thinking that is purely abstract or any feeling that is not qualified by thinking. The moments of thought and feeling when we experience are inseparable, save in the logical analysis which we are ever unconsciously making in daily life.

Esse may be said to be " *percipi* " or " *intelligi,*" if we

remember that experience is not a property of a particular self but the foundation underlying all that is, implying a self that experiences. Object and subject are not separable. They are rather phases, distinguished by the activity of reflection, within a mental process that is single and indivisible.

In such light as these reflections bring to me, I now turn back to consider my experience when I recognise my friend who came down the road to my house. He was for me at first only a moving object, which I did not distinguish from other moving objects I interpreted as human. As he comes near, however, I now distinguish him from other men, for I recognise in him one whom I know, not merely as a member of the human species, but as the father of a particular family with which I am intimate. As he comes still nearer I catch an expression on his face which shows that he, in his turn, recognises me. I think of him as one with whom I have had many talks and many dealings. His history as I know it, and my history as he knows it, are what enable us to interpret and develop the existence of each for the other. We are two things, no doubt: made up of so many pounds of carbon and other chemical substances. But that is only one aspect, and is not the important aspect for either of us. We are equally clearly two living organisms which imply for their reality self-control and self-development, in accordance with inherent biological ends which go beyond the level of the mechanical and chemical relations that are the characteristics of the mere thing. But still, if we were merely living organisms, we should have no consciousness, no knowledge, no feeling. We should not each be "I," or for each other what we are. We should not be selves or personalities. Now it is just in so far as we are selves or personalities, with what this implies in the way of recollection, of experience, and of recognition of the self as grouped with other selves in society, that we as friends have meaning for each other. Apart from knowledge of this kind we should not exist for each other as we are. The essence of our mutual existence is the *meaning* we have for each other. That meaning is constitutive of such existence. Of other men I say that they might conceivably have had such special relations to me, but they have not, and by so much I do not know them.

Their individual personalities may have special signification for others, but for me they have no special signification. They are only members of the species man, a great fact carrying in its train great social implications. In possessing this meaning for me they do exist as men. But for me they do not exist as my friends, for they have no relation to me of this kind, and the friendship has therefore no place in my own particular world of fact. The condition of friendship is the recognition it implies.

When, therefore, I recognise my friend, I have passed far beyond the limits of mere sensation, of mere sight, or of mere touch, considered as nothing more. These stand for necessary moments in direct knowledge. But what I get from them are the indications which I interpret and on which I build my conceptions, conceptions which are inseparable from the reality of my world, but which are yet largely drawn from my own self-knowledge. For it is only by interpreting my friend in the light of the content of my own consciousness, with its recollections and other material stored up in it, as acquired in the past and preserved in my memory, that I find the reality of the orders with which I am concerned in my knowledge of him. He is what he is, in the first place, because he is a body with a particular appearance and history. That enables him to be segregated and identified as the living body of John Smith. But although this is a phase and a necessary one in his existence as a particular man, and as different from myself, it is not all or nearly all. It is the characteristics that appear to pertain to John Smith at a higher order of knowledge than this one, that have made it possible that he and I should have the significance for each other in which we have become friends.

What is the foundation of such significance? Plainly this, that we feel and think and remember alike. Alike, but not in exactly the same way. He has his point of view, and I my own. But although differences come in, these points of view do not conflict. For there is correspondence between them. In that there is difference they are not identical. If they were, there would not be two distinct minds, each conscious of the other as its object. For all consciousness of objects implies consciousness of difference. But in consciousness there may be correspondence, that is, the recognition of identity in difference.

Now it is only when the level of thought is reached that we can have identity in difference. Thoughts can be identical because they are in the nature, not of events, but of what is of the universal in character. But mere feelings and other events, if indeed there be such, must have the particular as characteristic of their nature, and are, just on that account, never identical. If we would get precise information about them, we must use methods such as Professor Whitehead's method of Extensive Abstraction. We may so reduce them to their limiting conceptions. As such they will become instants and points in time and space ; that is, they will become abstractions of reflection. When Leibnitz spoke of the identity of indiscernibles, he used a rather doubtful expression. No doubt conceptions of thought, if they are held out at arm's length and distorted into mere occurrences in time and space by the artificial procedure of psychology, may in a sense be spoken of as indiscernible, provided they are not sought to be distinguished merely as successive events. But even that is not quite true, because they remain, like instants and points, discerned as separate in space-time. In so far they belong to thought and are not truly held out without reference to self as mere occurrences, but are in truth thoughts reached by reasoning about experience. We cannot form any pictorial ideas that are true of instants or points. We always present them as concrete individuals in imagination. When, on the other hand, we say that their meaning is the same, what we actually intend to convey is, that the thinking imported is identical in character, and not that there is external resemblance between two mental pictures, as in the fashion in which one fact external to another in time and space may resemble it. But even in the latter case corresponding reflection is ultimately at the root of reality.

When John Smith and I meet at my door and shake hands, and begin to talk of what interests us in the progress of the harvest or of the Church Missionary Society, it is the correspondence in our thinking that matters. It is actual identity in conception that underlies that correspondence in our reflections. Differences, of course, there are, but not such as to preclude correspondence in our ways of looking at things based on sameness of conception. For thought as such is no activity in space

or time. It is that in which such activity and all else is presented.

What is the relationship that is essential when two friends meet? The respective individualities do not lie in the filling of different parts of space with substances, or even in the fulfilment of similar ends by the living organisms, but in a wide range of meaning and its interpretation common to the two minds. Each is mind for the other, and is a particular mind with a characteristic embodiment, inasmuch as in each mind expresses itself in the form of a living organism that knows as well as lives, a form that is indeed inadequate to the full reality, but yet so far is symbolical of intelligence.

As we shall see later on when we come to consider the principle of degrees or orders in knowledge and reality, mechanism and life belong to different orders, neither of which is explicable or can even be expressed in the terms that belong to the other. A machine is a structure in which the parts, be they regarded merely as aggregates of molecules or be they looked on as larger masses of matter, are held together and aggregated *ab extra* through a system of causation in which the cause lies outside the effect. In a living organism, on the other hand, the meaning and the possibility of existence lie, not in any outside cause, but in an end which is everywhere and at all moments recognised as being actively present, and as in its domination constantly preserving itself amid metabolism of material. The whole is in each part, and the parts do not exist except in behaving as realising the whole. The organism reproduces itself, and the new life inherits, in a fashion that is inexplicable mechanically, modes of behaviour in which it resembles countless other individuals of the same species. It is thus that, self-fashioned, it pursues a definite course from birth to death. This is so throughout nature, and to try to explain it mechanically, as the fortuitous result of external causes, comes to seem, as the range of observation is progressively extending, more and more of an absurdity. Life can only be stated in terms of life. The repugnance to so stating its nature has arisen from the narrow notion that to do so is to express the quasi-purposive character of an end as being something supernatural, in the sense of lying outside the laws of nature. But this anxiety is exaggerated. It

arises from the assumption that the world of nature can be stated in terms of matter and motion. The defects of this view we considered earlier. It is not harder to believe that life is more than mechanism than it is to believe that knowledge is more than life. It is true that knowledge, referred to the course of nature taken as a " closed system," is found in the individual human being as conditioned by his organism, just as his life is found to be dependent on mechanical conditions. To accept this fact is one thing. It is quite a different thing to identify the two, or to try to reduce the higher to the lower, or to express it in terms of the lower. They are not separate entities in time and space, but belong to different orders of experience, exhibiting that relativity which belongs to all our knowledge, and are subject to the laws of their own order and not of other orders which have no meaning for them. Nature treated as a " closed system " is not fully interpreted. Unless this is realised difficulties of explanation become insuperable. The principles of the conservation and degradation of energy belong to the mechanical aspect or order of principle, and, as applying to that aspect, we have no reason to question their unbroken sway. When we come to the other order, in reality and in our knowledge of it, within which life falls, the notion of what we call in this connection an end as the controlling influence is just as natural. There is never anything that is supernatural in the sense of violating the conditions obtaining throughout its own order. But there are many different orders, and it is the confusion of their points of view and appropriate conceptions with those of other orders that gives rise to the false idea of the supernatural.

When I and my friend recognise each other and begin to talk, it is to a still higher order in the varying aspects of reality than the order of mere life that the relationship of correspondence in our minds belongs. This is now the dominant order, and is other than that in which causation, or even the fulfilment by the living organism of the ends which fashion its course of life, prevail. It is in terms of this order that we say that the most important relationship of human beings to each other is one which turns on true identity of thought. Human individuality implies many aspects, mental, organic and inorganic. The body expresses personality, and is symbolical of personality as

its interpretation, but it is, in aspects which are inseparable from its reality, not the less a physical body. These are the aspects in which individuals are external to one another. When we reach the level in reality which belongs to the higher order called mind, there is difference here also between individualities, yet it is difference which does not have its root in externality, but in that divergence which is embraced in all correspondence, and yet ultimately implies the identity in difference between modes of thinking that lies at the foundation of correspondence in mental activity. It is an identity the import of which extends to memory, to imagination, and to feeling, as well as to reflective activity.

How the world we experience seems to us, and what it really is for us, thus depends in the event on interpretation, and the meaning which is the result of that interpretation. Knowledge is a process, an activity. It is what we have called dynamic and never static, in the nature of subject rather than substance. What it yields it yields in a form that is always in large measure of a general character. The merely particular has no meaning for us excepting as set in the universal. In saying this I am not referring to mere psychological analysis, which is often bound to be artificial, nor am I thinking of knowledge as an instrument. To have regarded it as such seems to me to have been one of the most grievous errors in the past, and to be a common one even to-day. The error is due to the idea that knowledge can be treated as just a means by the use of which we gain access to its object, and it has suggested the false idea that there is an insuperable gulf which must separate what is called mind from matter, and make us choose between idealism and realism.

The simplest way of approaching the problem of what reality amounts to is to start with experience as real, and to watch its implications and changes. As I sit in my chair I have a definite experience, varying constantly in its scope, of what surrounds me in the room where I am, and of what I see out of the window. Other and different experiences are open to me if I choose to move about, and so alter the conditions, or to make extensive use of such further senses as that of touch. But each form in my experience seems to consist with every other, and to fit into a system or entirety which can be accounted for as real

only if the explanation be sought for, not from lower up towards higher, but from the self downwards. What I see is different from what I feel, but there is correspondence between them, and they appear to belong to a single system. Now this system as a whole has certainly one condition. It is and must be no less than the entirety of the experience of the self that in one of its aspects at all events is sitting in the chair. That self is limited by the external organism, with its various modes and channels of sensation, in which it finds expression in the nature which is its object-world. Indeed, there appears to be no self independent of the organism. But, then, what is this organism ? It is more than merely living. It has eyes, and thus it sees ; it has ears, and thus it hears ; it has hands, and thus it touches. It has, too, a brain, and it thus apprehends and understands. At first glance these qualities look like the properties of a thing. But is this anything approaching to a sufficient account of them, even when regarded as qualities of what sits in the chair ? Let us see.

When I, sitting here, put to myself the question of what I am, there is one answer which, so far as it carries me, is obviously true. I am subject in knowledge as plainly as I am object. That is just to say that I know. I am the centre, finite, it is true, but still the centre, in which my experience holds together and to which it is referred back. I individually have direct experience through my senses of very little of the universe. Beyond Carlton House Terrace, the mansions of which I can see from where I sit, there lies a great city. I infer this from data with which my sense organs furnish me, though I do not have direct sense-experience of the London that lies beyond the horizon of vision. I think of my actual experience as forming part of an intelligible system, the parts and relations of which that are not directly experienced can be known indirectly from what is immediately known. The full system is constructed in my experience through concepts applied, and it is in the light of the conceptual whole that I attach meaning to the part in front of me. This whole exists for me who am stationed here and now. It may have an existence and meaning beyond this fact, but it has at least this form of existence and meaning.

When I turn reflection in upon the " me " for whom these things are, the first thing that strikes me is that it is

obvious why I apprehend directly only a fragment of the Universe. The " I " who apprehends it can indeed think unrestrained by physical limits, and can pass in thought by inference and reasoning beyond the margin of what it can perceive. For mind, if it may be spoken of as an instrument, has no boundary to its scope. It can have none, for its problems are in truth its own creatures. If the self fails in wielding reason it is not because of any defect in its instrument, but because of its inability to wield it. For the self is in its aspect as object for itself physically limited. I am not my clothes, nor are the surroundings which belong to my bodily life part of my nature as subject in knowledge. And yet they condition its grasp and power of presentation. They set bounds to my bodily activity, and the bondage of the body affects the power of the mind. When overcome by fatigue or drowsiness I cannot think properly. The existence of my soul is so far at least dependent on conditions of time and space and the material that fills them.

On the other hand, it is for me sitting here that the panorama of life presents itself. It may be that a meaning can be ascribed to its possible existence independently of me, but excepting as known as it is for me, actually or possibly, it does not come before me, and cannot come to utterance. In that sense at least its existence centres in me. What were a world apart from relations such as externality, and cause, and end, and beauty, and goodness ? And what do these signify apart from their interpretation by the mind that apprehends them ? To project them all into a so-called " non-mental " world is just to project mind with them into that world, and thus, not to eliminate a subjective side in knowledge, but to demonstrate afresh its inseparability as an integral moment in the entirety. Subjective idealism and objective realism seem to be little else than different names for the same inadequate attempt.

When, then, I ask what the " I " is, it is not surprising that it is difficult of description excepting as an essential moment in the " not-me." By withdrawing my attention from the latter I become more and more clearly aware of the presence at every turn in my experience of conceptual thought, the thought which directs itself to concentration, not simply on particulars of sense, but on their relations

and the meanings which these relations embody. The "I" is the centre of thought to which these are all referred. It is to "me" that the whole of experience is brought back. When it is brought back in the form of reflection, rather than of sensuous apprehension, it is brought to a focus in thinking, to mind itself as sought to be disentangled from what is *for* mind. It is only by abstraction that the distinction is affected, but the abstraction is one which lays stress on the mental side as not less actual than what is taken to be the physical side. "I," approached thus, am of the nature of the universal. Except as it is for me the world is incapable of interpretation. Object and subject therefore cannot be looked on as two things existing independently or as separate entities of any kind. They are rather different aspects in an integral process or spiritual activity, a whole within which both fall as aspects. That whole is experience, an experience that is dynamic and not static, and is in its real nature subject yet more distinctly than substance.

But the aspects of this experience do not themselves appear as having significance independently of each other. It is true that I, who sit in this chair and look out of the window, am from one point of view just activity in reflection, the centre to which the activities of thought and volition and freedom are referred. But although this centre I am finite. And the finiteness appears on scrutiny to consist in the fact that the self is expressed in an organism which it invests with intelligence and with the distinctive characteristics of mind. The self is related to its organism, not as a thing apart, but rather as an end which it embodies. It is thus that the organism, taken at a higher degree in its reality, is a rational being, and possesses initiative and freedom in this initiative. We mean to convey so much when we say that the organism is a personality. It is more than mere life, it is still more than a mere machine. And yet it presents the aspects which are distinctive of each of these orders of existence, though it presents them only in a relationship to the higher orders just referred to. They are essential, for apart from them the nature of the self would consist merely in the universals of reflection, and there would be no world of nature. Differences between personalities would not exist. It is through the organic and the inorganic conditions under which it is known as

its own object that the self is a finite centre and a distinct individual.

We may put the conclusions of this chapter in another way in which the transition towards completion by experience is apparent. As we find it experience implies a self whose experience it is. But, even if we make abstraction in reflection from the self, and regard the object-world of nature as though it could be closed to mind, we see in that object-world the suggestion of the relation between percipient and perceived which thrusts itself more and more clearly on our attention as we progress. Even the merest living organism appears to be continuously distinguishing itself from its environment in a fashion that has no analogue in the machine. The oyster closes its shell when a foreign substance is sought to be introduced. It gives out and takes in what the end that controls its processes of life requires. It may have no consciousness, no feeling, but its life presents this characteristic. As we go higher there is a closer approximation to the reality of a self. The dog may not say "I," but he has a sense of property. He resents the intrusion into his house of another dog, which he will yet tolerate outside it; he barks at a stranger who approaches the door; he has a sense of propriety which makes him ashamed when he has misbehaved. All this shows that he has formed in his intelligence the germ of a consciousness of self. The world is not significant for him as it is for us. He is lacking in concepts. For him the full world does not exist, but some world does from which he distinguishes himself as if from a not-self.

When we reach the contemplation of man in experience a still higher level has been attained. The significances of both the not-self and the self are fuller. As organisms we are in the world. But we are more than of it, because that world is included along with ourselves in an entirety of reflection. To that entirety we belong as mind, not in the way in which a thing with a number is found among other things with different numbers, but as forms of mind at a stage in knowledge at which the whole is realised as single and indivisible, save in so far as at this stage knowledge expresses itself as conditioned by external requirements for its self-expression. These conditions belong to the *that* from which we start and cannot go behind. But the brain and the personality, external as they are in one

aspect, are not the less expressive of mind and recognised as signifying the presence of mind. That the objective world should be reached at all, through the nerves and the cerebral centres, is evidence of what the organism signifies for a more adequate interpretation.

Mind thus finds mind in external form. But the externality when construed receives meaning only through distinctions which fall within knowledge. As, therefore, we proceed to a still more adequate view of knowledge, more adequate because now wide enough to account for the hard facts, we find that the general distinction between object and subject which seems so fundamental when superficially looked at, is itself one which has a subordinate place when regarded from the only standpoints that are adequate, those of knowledge as an entirety.

We saw how this view pressed itself on us even in physical science. For, as Chapter IV made apparent, even the resolute attempt to treat nature as closed to mind made by Professor Whitehead only demonstrated afresh the derivation of the reality of its object from the mind that the object appears to confront as independent of it. This is the lesson taught alike by science in all its forms and by philosophy.

CHAPTER VIII

MEANING AS ENTERING INTO REALITY

If the path pursued is leading in a right direction, we have got some distance towards a source of light by which we may read the self. My experience has its focus in an "I," which is the essential condition of all experience. As we saw in an early chapter, presence to mind has been made, by at least one eminent mathematician under the form of sense-awareness, the foundation of the congruence of the various space-time systems of nature, objective but varying, according to the principle of physical relativity. Nature thus in truth does not shut out mind. The relation of mind to nature is a foundational one, and it lies in this, that there can be no meaning in any object-world that is not object-world for a knower. If there can be no meaning for the object there can be accordingly no existence for it. For existence involves meaning, and is not a fact unless it is significant.

The difficulty which people feel in accepting such a view as this arises, as we saw, from their identification of the self that knows with the self as merely known. The latter is taken to be merely a particular object in space and time, especially in so far as it has the form of a living organism. To this extent it is obviously dependent on nature, and nature does not depend on it.

Of course this is so far truth. But it is not the full truth. For the fact that nature is not exclusive of the work of mind in constituting it is shown, even in our mere sense-awareness, to be a necessary condition of the possibility of congruence. This seems to imply that the object-world has as its correlative the subject for which it is the field of knowledge that is present to that subject, and in which it distinguishes even itself as made object from itself. The relation is an impossible one to visualise, simply

because visualisation can only be of what are possible objects in the field of perception. Now knowledge merely as such is no object external to the mind that knows. Its nature is to be just itself, subject and not substance, definable in no terms beyond its own. Its character must therefore partake of that of the universal. When I say that I know I do not grasp at any particular. I refer to thought, general in its character and application. To get at what is particular I must include my object-world, and include it as an aspect in my individuality. Thus knowledge is, taken in isolation, an abstraction and as such unreal. It is one moment only in the real. Subject and object are, in short, undivorceable. For they are aspects mutually implied in the only kind of reality that is in character ultimate, inasmuch as there can be no meaning in anything outside it. This is individual, and of the nature of the concrete universal which involves presence to a subject, but includes an object aspect just as much as that of being subject.

If all this be true, then when we find mind as an object in nature, which we do when the object is an intelligent living being, mind is recognising itself, and is confronted in its object, not with any separate entity, but with itself, with what signifies intelligence and that identity which is distinctive of the universals of thought alone, the identity in difference in which I found my relation to my friend, John Smith, to lie. My organism as expressive of knowledge is essentially here and now. His, as similarly expressive, is there and then. And in my organism I am aware of myself as a centre, finite in virtue of my corporeal conditions, but still a centre, of experience as it is for me. In virtue of the fact that in my fellow-man I am finding a self that corresponds to my own, I recognise that John Smith is mind, and that, in knowing him as object for my knowledge, mind is finding mind. It is the universals of thought that make our relations correspond. They exhibit identity amid difference, depending for its form on standpoint. If he is there and then for me, when I am here and now, I am then and there reciprocally for him as here and now. Literal identity in conception can alone make this intelligible.

It is thus the intrinsic relation of the two, not as separate entities, but as aspects differentiated within the entirety

of knowledge by itself, to which we must look if we are to get a better understanding of the relation of subject to object and of our minds to those of others and to nature. Metaphor is specially unhelpful in the solution of the problem. We cannot succeed if we start off with an image such as that of two things confronting each other. For just the same reason, what is higher will prove inexplicable if the platform chosen for departure is one which belongs to a lower order in reflection. Mind cannot be reached from matter. Nor can their relations be understood if mind is visualised, as Locke and Berkeley and Hume tried to visualise it. Knowledge must be allowed to explain itself. That is why its embodiment in meaning becomes of crucial importance, and why reality in the end turns out to be a form of meaning. To try to witness the genesis of mind in time is thus, so far as concerns the ultimate nature and significance of mind, to try to put the cart before the horse. Such a procedure may be useful for the psychologist as an artifice, but it can throw no light on the final character of the real. It is common ground that the physical form of man presents different aspects. Its inherent character varies as the standpoint from which it is regarded in reflection varies. At one level in experience it is reality as physical. At another it is recognised as the expression of an "I," which is not the less an "I" because it is known, in a form arising within the field of its own reflection, as sitting in a chair. As we withdraw from the chair we approach progressively towards the "I" that is plainly much more than a thing, and we find that the progress is towards its identification with the cardinal fact that we know.

It may be useful to pursue this line further, and to ask what is implied when we speak of mind with a form that is finite.

I walk along the street in a world of persons and things. I am one of these, but I am also a particular mind which is in a sense their centre and which recognises them as there. What does this mean? To take an analogy from mathematical physics, I am at rest and in relation to me the world is changing. But this is only relatively true, for I am in my turn a changing object for others, who, like myself, take themselves to be finite centres at rest with existence changing while there for them. To

be at rest in this sense is therefore for general interpretation as much a relative conception as it is in physics. The difference is that whereas in physics the position depends on the system of co-ordinates chosen, here it depends on the system of concepts employed, those of mind and of its self-disclosure as object. Such relativity is possible in both cases only because our knowledge is through universals. Because it is mind that expresses itself and characterises us, John Smith and I are what we are to each other through the identity of our thought about things. We are finite centres which present such identity amid differences. That is why we find ourselves in the same world and see the same people and the same streets.

To understand this we have to avoid forgetting, what has already been said, that to have meaning is of the essence of being actual. Our interpretation of our own experience may be right or it may be wrong, but in the absence of some interpretation experience is neither real nor experience at all. It is impossible to interpret existence otherwise than as a form of meaning. That is what Kant taught us a long time ago, and Kant was not the first to point it out. The object thus stands in an integral relation with knowledge, and has its origin in distinctions made within it. Such knowledge may be of varying degrees and kinds, the outcome of the self-directing freedom of mind that pursues it. With these variations there will alter the characters apprehended in the object. This is no fleeting or independent set of sense-particulars. For it is only by employing general conceptions that we can even speak about it. That this is so is obvious. A square is no affair of passive awareness. It is a symbol of what is interpreted as of a significance that is general. Nor is a living organism a revelation through bare sensation. Its distinctive character is that we recognise in it self-conservation, an end conceived as dominant and remaining so through change in particulars and continuous metabolism of material. Here, again, we are confronted with what is in character universal.

I will endeavour to bring together the results so far reached. They embody what is suggested as the basis for completion of the necessary view of nature.

1. The only method of attaining to such a view that

affords any chance of avoiding unconscious assumptions is the method of trying to take the simple fact of experience and to observe it in the self-explanation which the activity of thought offers. We thus go away, as far as we can, from hypostatising our knowledge into the image of an instrument applied from without, and observe its own activity.

2. In our experience, in its fullest aspect as a form of knowledge, we find that to know means to be neither only subject nor only object, but that these are the moments in a larger entirety, which is the actual fact of knowledge within which they are distinguished. This is the fundamental characteristic of reality in its ultimate character.

3. "*I*," sought to be taken *per se* and out of my contrast to my object-world, is an empty universal, unreal excepting as a moment in the more comprehensive entirety.

4. What is "not-me," when we seek to exclude "me" as the other moment, is an equally unreal abstraction.

5. But the abstract "not-me" is not confined in experience to externality, such as that of nature taken to be in absolute externality in space and time. For in experience it confronts "me" in differing orders. Within each of these we have a principle reigning, and this principle is never transcended in its own order of reflection. Thus externality gives birth only to externality, and not to life which implies an end that is quite other than external, or to mind as indicative of the order to which it belongs as a fact of existence. There is never anything that is truly supernatural, but there may be experience belonging to a different order from that which at the moment confronts us.

6. The orders among objects progress from externality, as in the extreme forms of mutually exclusive points in space and mutually exclusive successive instants in the time series, to the finite centre of knowledge, in which mind has its object as mind. Here we have experience of what we call the soul.

7. Each individual object may include, as does what we name the living organism, the characters of a plurality of orders.

8. Self and not-self are wrongly conceived if visualised as mutually exclusive externalities. They are reciprocally

implied factors in self-distinction by mind within its complete entirety. The object may have spatial and temporal relations as indicative of certain orders of reality expressed in it. But it may, through the presence of higher orders, be also recognised as a self that knows, finite because object and as such conditioned in space and time. It implies, in that it knows, the moment of the subject in knowledge. It knows, but yet knows as *here* and *now*. Our sense-awareness illustrates this, and is a feature in which the externality to each other of various systems is transcended and their congruence is rendered intelligible. Thus we get the "finite centre."

9. Man's place in nature is determined, so far as his aspect is natural, by nature. Science generally and evolution under the guiding influence of ends explain it. But as soon as we have to take into account the higher aspect in which man finds himself as personality, and says "I," the knowledge that is confined to nature as relatively closed to mind is insufficient for the explanation of man's position in the cosmos and its signification. Nature taken as closed to mind cannot display to us orders depending on categories in which we pass beyond an object aspect. The ends that are realised in us point to such categories, and our experience of the soul and the state points to them very definitely. Such experience cannot be explained as evolution based only on succession and causation. Ends and conscious purposes are apparent in its phenomena.

I may be reproached for the terms I have employed. It will be said that they are metaphysical and obscure. It is quite true that they are metaphysical, and they are certainly not familiar. But it is the very difficulty of all metaphysics that it can never be made intelligible by the use of popular words. Such words import pictures of occurrences. They always convey metaphors, and consequently they are always misleading. Metaphysics, more than any other branch of inquiry, needs a terminology of its own, chosen because of its freedom from suggestion. What we have to eliminate, if we would get at the nature of reality, is unconscious and illegitimate assumptions. These prevail everywhere in the popular discussions of the subject. The effort to avoid them requires no defence, although it may land us in the use of words not less uncouth

than those the mathematician uses. Metaphysics is a subject in its character just as difficult as is mathematics, and perhaps more so. For it is more elusive and it requires preliminary study not less thorough. But while the necessity for these things is conceded in the case of mathematics, in that of metaphysics it is not conceded. As has been observed, a cobbler is supposed to need a special education, but a philosopher is not. To interpret and arrange your categories is more difficult than to make a pair of shoes. I am not sure that it may not be in the end more difficult than to interpret and handle " tensors " and the intricate equations in which they appear. But little account is taken of this circumstance. The mathematicians are kicking the metaphysicians up the mountain. Rightly, because the mountain has to be ascended. But the metaphysicians at least know where the precipices and crevasses lie. The mathematicians are ascending along with their brethren into a metaphysical region, and it is not for them to reproach the latter if they claim to use guidebooks with a terminology less misleading than is the ordinary language of social intercourse. The mathematicians themselves have been very particular on this point. They have what is, relatively speaking, a highly exact terminology, referring to symbols with which they experiment as though these were counters. The metaphysicians neither are nor can be so well off. Their relatives must not reproach them if they use words which, if they do not easily convey exactly what is meant, at least exclude what is not meant. No doubt the atmosphere is a rarefied one. If you are bidden to ascend the Himalayas and report on the view, you anticipate a deficient atmosphere and provide yourself with oxygen apparatus, as cumbersome as it is indispensable. No one ought to reproach you for so doing, or take exception to the use of artificial means without being himself accustomed to the exceptional conditions. For this is the only effective method of reaching the level at which there becomes possible a survey from these heights. It would have been well for human knowledge if philosophers had not been as timid as they have often proved, and had been able to insist, as their spiritual relatives have done, on having a definite terminology of their own.

We may now return to the question of how meaning

enters into reality, and exhibits order in degrees. We know the self that perceives as being an object, sitting in a chair it may be, but in any case falling within the natural world of objects. We have seen what is meant by the statement that it is possible to be at once percipient and perceived. How can the subject that knows be also the object that is known? For we cannot split up reality. Is it open to us to look upon what we perceive to be a biological organism as being also the mind that perceives it? A way out of the difficulty appears possible if existence actually presents itself at stages or degrees which are different in kind, and if the one system of reality can therefore appear in differing aspects which vary according to the order of thought within which reality is interpreted, as even in Einstein's physical doctrine. If, for example, we excluded all conceptions excepting those of a nature purely mechanistic, an organism would present the relationships of the parts of a machine and these only. The physicist and the chemist work with such conceptions, and for them the organism is simply matter and energy, exhibiting the causal principles of physics and chemistry and conforming to their laws. Approached in this aspect and order in reality there is no reason to doubt that the laws of the conservation and degradation of energy will be found to be reigning unbroken, or that the uniformities of molecular structure will obtain here as elsewhere in the experience of the chemist. But although we accept this interpretation so far as it goes, it does not enable us to interpret fully or even to observe or describe a living organism. The characteristics of such an organism do not lie merely in its molecular structure, and still less in any aspect of its activities in which these are related as causes external to their effects. Its composition is ever changing. It is always parting with its substance and taking in fresh substance, while preserving its form and life. Between itself and the environment there is no sharp or exact line of demarcation. Passage into a different stage in development is everywhere apparent. No particle remains permanently. The characteristics of the living creature have come to it by inheritance, and cannot be described in mechanistic terms. To claim that they can be so described, excepting under violent abstractions that deprive the language used of any approach to adequacy, is to ignore

the teaching both of biology and of common sense. The essence of the nature of a living organism lies in its control, not by external causes, but by an end which conserves its existence through a definite course, commencing before birth and terminating only in death. It is the end that fulfils itself, progressively and yet in a definite fashion, that signifies in the organism in which it expresses itself identity in the life of that organism. The organism maintains that identity despite metabolism and the continuous process of change in material. It is the end which is the characteristic feature of life, and which constitutes the living being a whole that gives their meaning to parts each of which performs a function in that whole, and each of which has itself no life excepting as a living member of the whole for which it functions. The notion of cause is wholly inapplicable. The end is nothing more than a determining and common behaviour, which has no reality apart from the members which live and are nourished and sustained only in maintaining it. Yet it influences their conduct, and keeps it constant. That is why the organism preserves its life, and does not necessarily stop, as a machine might, because of merely momentary disturbance from without.

To attempt to render such phenomena of everyday experience into mechanistic terminology is, as I have already said, to attempt what is impossible. It is only in terms of life that life can be expressed. The end the persistence and self-direction of which constitute its essence does not belong to the order of externality. It is true that from a different standpoint the living organism can be treated as if its relationships were merely those of time and space, and as if it were subject to their conditions in the aspects which it so presents. This is the method by which the physicist and the chemist investigate the phenomena of life, and it is fruitful and necessary. But it is inadequate to the actual. For the living organism has the other aspects in which it comes under different orders in knowledge and reality alike. So far as concerns the end, controlling the behaviour of what occupies both space and time, the difficulty which we encounter elsewhere in trying to conceive causal action at a distance has no application. For the end is ideal. It is, as I have already said, more analogous to the disciplined common purpose

of an army than to an external cause. It is everywhere present, and it is also present in every instant of growth and in every point of development, bringing the future to actuality in the circumstances of the present. It is no influence operating *ab extra* that we are here dealing with, any more than on the other hand it is the consciously selected purpose of a being that exercises intelligent self-control. We are concerned with a concept that belongs only to biological science, and not to physics, on the one hand, nor to the region of mind, on the other. This conclusion seems at least in harmony with our actual observation and experience. What its theoretical possibility implies we shall consider presently. The point at this stage is that even as a mere biological fact the individual who sits in the chair is unintelligible if the only concepts available for his interpretation are those of mechanism. Indeed, we may go further. If we concede, for the sake of argument, the validity of the dubious distinction between a character that is non-mental and one that is analogous to that of mind, then the individual human organism may well, in respect of its character, be assigned to the mental world. It is less difficult to conceive it as having a variety of aspects if each of these can possess only relative reality.

When we turn from the phenomena of mere life to those of mind, we are faced by what is analogous. In the preceding chapter it was pointed out that the personality of the individual John Smith rested in the correspondence, the identity despite difference, between his thinking and that of his neighbours. John Smith is an animal, but it is not as an animal that he is my friend. It is as a man ; that is, as a freely and intelligently selecting mind. Neither his physical nor his biological aspect or qualities avail to make him this ; but only those that belong to the orders in knowledge that are implied in the experience I have in him of what is intellectual, moral, and spiritual. We saw that it is not through mere sense-particulars that these are apprehended. It is only by interpretation that can yield meaning, and that depends on actual identity in the conceptions of thought. The signs interpreted have to be significant of such conceptions as being identically present in the mind of my friend as well as in my own mind, and the access is by way of reflection and memory.

It is thus that mind becomes aware of mind. Each mind has an aspect in which it is object for the other, an object interpreted, however, to signify another subject in knowledge, the "I" particularised in form. The self is expressed in a physical organism whose behaviour we construe as meaning what our own personality means for us. It is thus that we attach significance to its signs, and render its language. But, in so far as these embody meaning, it is only for developed intelligence that they embody it. They are phenomena of what, in aspects pertaining to a different order, belongs to the merely external. All aspects must be co-present for reflection that is fully comprehensive. The apprehension of the actual in its integrity requires them all. But they do not, when taken in isolation, constitute fragments of the actual, existing externally to and independently of each other. The actual object the aspects of which are thus collectively presented is no arithmetical collection of these aspects. It is an entirety interpreted from points of view which differ in their logical character, and belong to different orders in knowledge, no one of which is reducible to the other, however much it may require its presence. Here again we seem to encounter, not the result of any metaphysical theory, but a fact which everyday experience forces on us. It would seem as though we could only hope to get at the entirety of the actual by leaving knowledge to exhibit its own implications, and to develop itself free from constraint of standpoint and of consequent relativity in conception. But knowledge, though in its final nature both free and creative, yet at our actual level in its own hierarchy reveals itself for us only as subjected to the organic conditions which belong to its finiteness as human knowledge, and it is accordingly only by hypothesis and experiment, and by reasoning that is in the first instance relational and discursive, that as human beings we can do our work.

If the complaint is made that I have not defined more fully the nature of knowledge as thus alleged to be foundational, and I am asked to describe it in familiar terms, my answer is that the request so made is misplaced. For knowledge as that foundational fact cannot be described in terms of anything beyond itself. Its conception is an ultimate one, within which both subject and object fall. We are all of us prone to lapse into the psychological attitude

and to try to hold out for examination mind as though it could be looked on as a thing. But when we do this we fall into the clutches of relativity, and it is just about what can only be relative truth that I am endeavouring to offer a warning. Attempts have been made to exhibit in systematic and complete form the entirety of knowledge in final fulness, by observing its self-development without introducing the confining and distorting standpoint of any special science. Whether these attempts have succeeded is doubtful. To this question we shall return later. Meantime it may be admitted freely that "knowledge" is a word that is apt to mislead. But it is probably the best term available, and it is doubtful whether *νοῦς* or *Wissenschaft* is more free from reproach. All three words may be so used as to suggest not unnaturally relative and not ultimate reality.

In every phase knowledge depends on interpretation. Its concern is meaning. The meanings belong to different orders of thought. Do they also belong to different orders in reality? Surely it is impossible to doubt this, if meaning is really involved in the actuality of experience. John Smith is certainly real. So is the living organism. So are the relations apart from which events would be non-existent. So is beauty and so is sin. No theory of subjective idealism can, as we have already seen, separate meaning from experience without lapsing into an impracticable scepticism. Nor is it in the least apparent how to relegate all these aspects of reality to a non-mental world, distinguished as existing in separation from any percipient object and acted on by it in a mere relation of external causation.

What ordinary common sense believes seems to be what it is also most natural to believe. The universe appears to us, unlike some of our Victorian predecessors, as but one entirety. I apprehend it and myself within it. But this I do through reflection, by mediate knowledge, for although I apprehend to a certain extent directly through my senses, I do so only in so far as I interpret what my senses tell me. The direct data with which these can furnish me are limited by the conditions of my organism. These data have reality for me through feeling indeed, but through feeling interpreted. By fuller reflection, reflection which proceeds in an ever-increasing

degree inferentially and through general ideas, I can proceed beyond apparent immediacy, and extend the interpretation and the meanings which come to me through it. It is thus that I conceive the full universe. In the first stage the conceptions and categories which I employ, when I try to apprehend systematically, are few and simple. But as interpretation proceeds I require more of them, including many that belong to different orders in thought. We do not always find the various orders follow on each other in time according to their logical sequence. The child may think of its mother as some sort of personality before it thinks of her as the efficient cause of its surroundings. But reality is not thereby divorced from knowledge of reality. The percipient is an object in his universe, but it is still the universe including himself that is there for him, and for its meaning it implies the presence of mind.

We have now been brought face to face with the full problem of knowledge. The solution suggested is one which has the merit of being in substance an old one that has satisfied, not only some of the most acute of modern thinkers, but the metaphysicians of ancient Greece in their greatest periods. For these, too, entertained views in which knowing and the known are not regarded as separate or separable entities, or knowledge as a mere instrument that is taken up or laid down at pleasure, and applied *ab extra* to get at reality of a character independent of it. With the thinkers to whom I refer knowledge in its fulness did not exclude any phase of varying forms of intelligence. To feel and to will and to think were not activities belonging to separate faculties. The theoretical and the practical were not divorced in intelligence; for they appeared to these thinkers simply as different fashions in which it realised its ends, fashions which we distinguish only in our imagery. Such imagery is the natural procedure of mind as expressing itself through the senses and by the organism, a form in which its nature appears in degrees of reality which are not the highest. But, in the result, outside the activity of mind in knowledge there exists nothing in any intelligible sense, and all differences in kind of truth are the outcome of this activity. For to truth belong, as we saw, more standards than one. If the standard is one of value we accept its

results because we cannot do otherwise. The consciousness of difference in values seems to belong to mind at a level where it is more than it appears to be merely in our conditioned selves, and in which it imposes on us truth and system just because such truth and system are the foundations on which is built up our individual knowledge, with its freedom to err as readily as to go aright. It is thus from above, from levels that are qualitatively higher than our conditioned selves, and are not dependent on our individual vagaries, that we draw the guidance required for even daily life, and realise that the idea that is to prove true must be one that when tested proves adequate in all respects, theoretical and practical alike.

The essence of even finite mind, that is of mind in the form of an organism, is that such a mind is free. It is because such freedom is inherent in the very nature of mind at every level that we can choose error or truth, sin or righteousness.

We have, I hope, now got some light for the solution of the problem which pressed itself on us, the problem of how the subject that knows can be at the same time an object known. It turns out in the end to be a question of the categories employed, resulting from standpoints that are not mutually exclusive. Here, as in other respects, we are always more than we take ourselves to be.

As I sit in my chair I am not merely an " I," a subject, but I am one among many objects in nature. The mental character which as such an object I, who am also subject, possess in common with my neighbours, makes me judge the world in harmony with them. That world lies before me, and it is by my private judgment in the main accepted as what it is by that of my neighbours. Because I and they are minds thinking identical or corresponding thoughts, there is the same world for all of us. Only to a madman does what appears unquestionable to us seem otherwise, and he is mad under the distortion it may be of physical causes. Of course even healthy individuals vary. The limits within which we recognise the activity of mind as sane are very wide. Insight to an extent which agreeing with yet predominates over ordinary insight may indeed be possessed only at a price. A man of genius may be predominantly sane in what he tells us, for his grasp of what we recognise as of the highest of values may be greater

than ours. But the price he has paid for his self-concentration may have been such as to render him eccentric. Napoleon and Attila did not judge or act as do other men, nor did John the Baptist or St. Francis of Assisi, or Browning's "Grammarian." And yet in their own ways all these were supersane, though only in the orders of reflection in which they excelled. As ordinary human beings, as husbands and fathers, they would possibly have turned out deficient. But each of them had power of a kind that enabled him to move easily in a certain region in which smaller men would have striven vainly to move. They were genuinely specialists. Napoleon would have been but a poor evangelist, and John the Baptist would probably have proved to be a dubious leader at Austerlitz. Their specialism consisted in their power of exercising mastery, each in his own region, over certain concepts and images. They were supermen in the sense that in one direction or the other a greater power of mind in them marked them off from those around them. Yet the concepts and images of the greatest men of genius are only such as man's position in nature permits, and their own resemblance to the rest of humanity far exceeds their divergence from it. The concepts and images of such men are theoretically within the range of the most ordinary individual. That they can be understood and are held in esteem by ordinary men establishes this. Again, the normal limits of human individuality are partly physical. A headache or a toothache may hamper our capacity to think. In sleep consciousness does not cease, but my awareness of my bodily position and the operation of my senses in keeping me in communion with my surroundings are interrupted. We alter in intellectual capacity from time to time during the twenty-four hours in response to external conditions. Even the absence of sunshine may make the difference that Goethe declared that it made to his power of composition. Thus it is not merely want of concepts and images, or of access to these of higher orders, that hems us in. It is the physical aspect of the self, an aspect on which we, in that we belong to the object-world of nature, are dependent for the expression of that self. And this is true not the less although in a different aspect, belonging to a different level, we are free mind.

The animal that runs by my side has intelligence, and

he is in contact with his environment through his sense of smell to an extent which I am not and cannot be. In so far his world includes more than mine does. But in his case there is a limitation of mental individuality proportionate to his lack of concepts and of images. The larger orders of reflection do not exist for him. His universe is a restricted universe. He knows nothing, for instance, of wars or strikes. What he does not experience, because he cannot construct it in thought, is thus for him non-existent. He is confined to what is relatively immediate awareness through sensation in a fashion which I am not. For in my case there is a capacity, which he does not share, for reflection that is mediate, and that is operative through concepts and images of an order he cannot command.

The system of my experience and of the knowledge in which it is sustained is, on the other hand, restricted in my own case by the special features of my organism. I can conceive of beings intelligent as I am, but with senses of a different nature. Such beings may perceive in a fashion which I cannot even imagine. Moreover, they may be endowed with a brain-power capable of rendering itself more effectively than mine the organ of sustained thought. Both in immediate and in mediate comprehension such beings, if they exist, will be my superiors.

But if such beings do exist it appears clear that they are included in one and the same universe with myself. For it is only through reflection that their possible existence has any meaning for me, or mine for them. In this respect they resemble John Smith. I conceive of them as setting in thoughts that correspond to my own and are in so far identical with them, an experience the general structure of which, for intelligence, is just that of my own mind, and which differs from my experience only in its details. Such experiences are thus based on identity, the identity that characterises mind throughout and relates it to itself in its objects. To speak of numerically different universes is thus to use language that has no meaning.

As I sit in my chair and envisage myself as an object that is a mind in my world, I am therefore actually mind conscious of mind, although I am contemplating it under the limiting influence of relativity. I am indeed in truth

and in fact more than I take myself in so doing to be. I refer my knowledge back to an "I." In so far I am no longer chained to the view that all that comes into reflection is of object character. I have distinguished my object-world from the mind that contemplates it. But I have done so only to reintroduce that mind, the subject for which my world is its object, as in another aspect itself object. To regard this view as final is impossible, for I can discover no expression in which to define knowledge as being a causal operation in the space and time in which the object-world presents itself to me. It is in that I know that I exist. The relation of knowledge is presupposed in every attempt to present it in causal form. It is the foundation on which reality and unreality alike, truth and error, beauty and ugliness, righteousness and sin, all rest. Each of these presupposes knowledge as the medium in which they are and have meaning. That is what is intended when it is called "foundational." It is the entirety within which they appear as its aspects, at stages in relativity that make them all stand for degrees of unreality. The truth is the whole and these are but partial truths. I know as I find myself situated. My own knowledge is the "*that*" from which I have to make my start. Get behind it I cannot. My daily task is to explain *what* it is, and the consequent signification of the fact of my being the finite centre that I am.

This is the position in experience and in the system that contains experience as an aspect falling within it, the aspect of the self that as experienced contemplates from a chair. Because it is a self that contemplates from a chair, the St. James's Park and Carlton Terrace limit its horizon. Because it signifies a self that is more than merely such as sits in a chair, there are the unseen part of the Metropolis, the world, and the universe beyond. These exist for it inasmuch as the character of mind, even in finite form, is to have freedom from its limitations, not in immediate apprehension, but in mediate reflection. The unstinted range and might of thought enable it to transcend the limits which the senses and the situation impose. But even in reflection on the world of the most abstract character, the mind is looking for the revelation of its own character in its object. The freedom of our minds is no freedom in vain imagining. In our efforts

after knowledge we are compelled to look for system in what is before us, system which is no creature of our private reflections. Our unfreedom is of the sort which all who are truly free impose on themselves. They endeavour to think systematically and in harmony with principles which mind itself produces and imposes on itself. It is so that the harmony which is required by truth is found. A purely arbitrary procedure in knowledge is the procedure of error, and, because mind abhors error, it renounces the arbitrary, and seeks for the orderliness in thought that is inherently characteristic of its nature.

Because the object-world is in this fashion included in the entirety, and knowledge, so far from being a process of intervention between that world and the self, in truth overlaps both, there is no gap between the character of the object and that of the mind for which it is there. It is only in virtue of distinctions created within what is a whole that these characters are marked off from each other. They are different in so far as the standpoints from which they are apprehended are standpoints which imply conceptions of different orders. But the distinctions are not between independent entities, but between independent aspects in the presentations, at their respective standpoints within the entirety. It follows that there is no real problem raised as to the possibility or the genesis of knowledge, and that the question as to how knowledge is to be explained as the outcome of facts antecedent to it in logic and in time and space is one which is wholly irrational. The world of nature is there, just as it seems, and the self in the chair is there just as it seems. The only legitimate questions are those raised as to the fashion in which they present the aspects which they do.

If the character and the quality of the object-world be such as has now been suggested, a good many difficulties disappear. What we know is neither only the particular of immediate awareness through sense, nor the universal formulated and hypostatised in reflection. It is that which partakes by its nature of both characters, the individual or singular object which is there not more for thought than it is for sense, or for sense than it is for thought. In that object particular and universal do not exist in isolation. They have no meaning and cannot be

even expressed in such isolation. When we think, even as we believe, wholly abstractly, imagination has really come to our aid, and we are thinking in images, images fashioned freely, like the symbols of the mathematician, to accord with principles of general application that are implicit. The object of knowledge has just for this very reason been defined in philosophy as the concrete universal, as in other words implying mind, and this it is under all conditions.

It follows that sense and reflection are inseparable for us. It is no objection to the recognition of what is held to be real that it is only through reflection, aiding itself by moulding images to its purposes, that we can recognise that reality. This conclusion tends to supersede many controversies, including those that we encountered in the case of the space-time continuum. The difficulty there arose from the protagonists having treated as being one only for the methods of mathematics a question that was really for the methods of metaphysics. If the assumption, implied if not expressly made, that the mind is a sort of thing which is looking at another sort of thing called nature, be in ultimate analysis superfluous and really unmeaning, then it does not matter whether it is by direct perception or only by inference that we find the space-time continuum as something actually present in nature. It is a conception which is required in order to elicit the harmony of experience. To quote Einstein's own description of the treatment of the subject by Minkowski: "From a 'happening' in three-dimensional space, physics becomes, as it were, an 'existence' in the four-dimensional world." Such existence has of course to be ascertained by observation and experiment. No other method is worth much or can be relied on. But what we thus discover and observe is no mere particular of sense. It is the finding of itself in its object by mind. The test of truth is its adequacy for the explanation of experience, and for the description of what has a unique character in that experience. It is in terms of conceptual knowledge alone that we can describe what we cannot recognise by sight or touch as an object *per se*. But the description is not less one of an "It," of something actual, which we diagnose as the explanation of phenomena, as we do in the cases of atoms and electrons. It is real in just the same fashion as they are. For its recognition is a necessity of knowledge as it

stands to-day and is our guide in our belief in what is real. A working hypothesis the space-time activity no doubt is. But it is the hypothesis which the principles of mathematical physics as they now stand appear to compel us to regard as an hypothesis which not only works in practice but is true of reality.

If we rid our minds of the idea that in nature reality is confined to isolated entities which we somehow ought to be able to get at in direct perception, and which stand in merely independently conceived or external relations to each other, it is not difficult to accept the space-time continuum as being the basis of physical nature, provided, that is, we have reached a standpoint in our investigations from which physical reality cannot receive a full or consistent meaning without the hypothesis. This is because the character of reality is that of the concrete universal, for the recognition of which reflection is required as much as is sense. Nature is there. From a definite standpoint which has its place among the varying exhibitions of the relativity of knowledge it is independent of and appears closed to the observer. But not the less its texture is bound to be as much for him conceptual as it is sensuous. For both of these aspects have their places within the entirety of knowledge.

CHAPTER IX

APPEARANCE AND REALITY

We have now before us reasons for thinking that nature can be no self-contained entity apart from mind. It is in and through mind that it attains reality. The orders of nature are consequently not limited to those of externality. The full universe, of colour, of sound, of beauty, is not presented exclusively or adequately in any such forms. Other qualities clamour at our doors, and solely in virtue of our abstractions do we shut them out. It is only in a shower of metaphors that we suggest as explanatory of what is actual the ideas of the world of the pure physicist. Such a world is no real world.

If our knowledge could be perfected we should have before us as completed in their entire system the orders that contribute to what confronts us. Only by a divorce that except for strictly limited purposes is unjustifiable can we divide the mind that is at home in each and all of these orders from its object. As that object more and more suggests to us degrees of a progressively less abstract character, it approximates the more closely to the nature of mind itself, and the division between the two fades. In human personality mind finds *itself* for us more fully than in any outside thing. What it finds here is indeed of its own inmost nature. Man exists, in being and knowing alike, at degrees in reality which belong to the domain of mind, and are not merely such as characterise physical nature. It is accordingly only by a procedure resembling that of the Victorian bifurcationists that we can separate nature sharply off from intelligence. It is similarly that we divide the self from its human form. In truth these are not separate entities. They are appearances in different orders of knowledge. At its higher level in reflection the human organism appears as the self, and it is only at other

levels in our reflections, at which also we apprehend it, that it presents the appearance of a particular self instead of self simply. The identity in thought that characterises myself and my friend renders intelligible how a plurality of selves is possible. It is a plurality with physical aspects the source of which is man's place in nature. The identity, on the other hand, that underlies such a plurality of actual selves and explains it has for its origin the relation of nature to mind as its completion.

I am a particular person with a name, and a past and a kinship to others, as well as a situation in which I am here and now. So far I might be described almost as a mere organism might be. But I cannot be adequately so described, for none of these facts about me are separable from the other fact that they belong to me as a human personality, a self, a mind. As such I have the sense that I am more than even this, and that there is implied a yet higher degree than that of my appearance as a separate self in the experience of myself and others. I find pressed on me, in art, in religion, in thinking, the ideal of personality and of mind as at a different level on which my world is not divided from myself as at first sight it seems to be. Potentially at least I can comprehend this ideal, not "as through a glass, darkly," but in reflection, which if abstract is capable of realising the limits by which human knowledge is marked off from knowledge as conceivable. Within an individuality in which all the degrees in reality and their resulting relations were harmonised, subject and object would ideally come together, and the distinction between them would disclose itself as one wholly within the self. This is a conception which reflection itself suggests to us with increasing importunity.

For the animals below me such questions do not arise. Reality is for them confined to orders that do not admit of them, for they do not reach to the level in knowledge that is man's. In the case of beings, if such there be, of a higher order the difficulties in recognising the object as in complete harmony with mind may be less. But as mind is ever differentiating itself for us mortals in the processes that arise in its self-distinctions, the complete solution of all differences can belong fully to mind only at the highest level reason can compass, a level where thinking and creation must be contemplated as indistinguishable. Such

a level we do not attain in the place in experience that is ours. That place is one here and now, and affords the only foothold that is actual in our daily experience as men. It is but reflectively, by thought which can spread its wings and fly beyond the limits of what appears immediately, that we can explore the self in a fuller significance. In each case the significance and the reality are the same. That is the outcome of the doctrine of relativity and its completion.

Such a view is what is indicated if we refuse to treat nature as finally self-contained, or, more generally, if we decline to regard object as really divorceable from subject.

In the preceding chapters I have sought to throw some light upon what is meant by speaking of the fact of knowledge as an ultimate and foundational fact. Behind the fact that we know we cannot get; *cogito, sum,* not *cogito, ergo sum.* To ask what is the explanation of the fact that I know is therefore an irrational question. Of course it is true that we can trace in the external forms of nature the growth of the intelligent organism and of its activity in becoming conscious. For in so far as this growth takes place it is akin to that of the nervous system and the senses, and these belong to nature. In recognising this the view of the " Behaviourists " is as legitimate as it is essential. But it is a view only of the growth of mind as it discovers itself in nature; and nature presupposes the experience apart from which it is meaningless and within which it falls, as coming to us as much by interpretation through concepts as through the senses. The experience of myself as a centre takes a definite expression in the kind of organism in which knowledge expresses itself. It is by so much finite, and is itself an experience that varies and grows. For it is clear that the experience of myself as a finite centre is never either complete or final. What is of universal truth in the character and texture of such a limited experience depends, as I have pointed out, on thoughts which are identical in your thinking and in mine. But we have also sensations and feelings, and these, if they could be taken merely as such, would be ours individually and exclusively, for they come into consciousness only through our organisms. What is accessible to others is only that setting in reflection of particulars which is inseparable from the reality of these sensations and feelings

as facts. In other words, it is just in virtue of the universals of knowledge which go to their constitution that the experiences of different persons are identical, and that these persons can be even said to have the same sensations and feelings. The sensations and feelings are theirs exclusively and individually. But it is in virtue of these universals, identical in mind in every form, being inherent in particulars which are in what is actual inseparable from them excepting in so far as in reflection abstractions are made, that we see the same sun, moon, and stars before us. Pure knowledge through concepts and mere feelings are neither of them separate entities. The notions of them as self-subsisting are no more than asymptotic limits towards which the activity in which mind consists can direct itself indefinitely in abstractive analysis. But that activity can never finally fix them as entities, for, like the infinitesimal of the mathematician, they have no independent actuality. Experience is an entirety within which they are distinguished only when it is turned in on itself and is analysed by reflection within its own field.

Now the reasons why we speak of our sensations and feelings as though we could visualise them as self-subsistent, or seize on and hold them up as existences by themselves and with a character all their own, is that we concentrate in our practice on images of our own existence as being that of a physical organism. This is, however, a concentration which results in truth that is only partial. We always refer to an " I " in our experience, and therefore to a subject not less than to an object, and subject and object are neither properly separable nor mutually exclusive facts. The subject is the expression of experience in its quality of being foundational, as it is in the judgments we make and refer back to the self which judges. Our experience regarded on its subject side, as the experience of self, is approached through the instrumentality of conceptions which are appropriate only to a stage in reflection different from that at which the object-world is treated as self-subsisting. We can, and in daily life for many purposes do, think of the self as a thing, a body clothed with an infinity of properties and relationships, in fine as if it were a substance in space and time resembling other substances. But it is not the less, when we follow out more fully what its nature implies, subject as much

as it is object, and the more we abstract from the characteristics with which its objective form invests it, the more nearly does it present itself for reflection as a centre, not itself situated somewhere in space and time, but to which space and time are referred ; as the " here " and " now " in distinction from the " there " and " then." But these expressions stand, not for points in an absolute framework of space and time, but for universals with the identity of conception that characterises universals whoever may express them. The characteristic of the centre is therefore a reference back to thought, and this takes us straight to the focal point in knowledge, that activity of the self about which we have already spoken. What is the inference ? It is surely that the finiteness of the centre of personality belongs to the stage in its reality which it presents when apprehended in a less notional form, the apprehension which tends to lay its stress on sensation and feeling as if these were the dominant and only true moments in the real, and less on self-searching processes of thought of a more general kind. Sensation and feeling are represented as energies of the organism in the orders of knowledge to which they belong, and it is only in so far as the organism is envisaged as in an object-world that they have any place of their own in its system. Now it is true that even at the level of personality we still have before our minds the organism. Personality is the organism at a higher level in conception, just as what lives is matter and energy transformed and exhibited at a higher stage of reality as actually experienced, in which it expresses the end as the final cause of life. The principle of degrees in reality as well as in knowledge is the explanation of how this is possible, and the facts appear to bear out the explanation. But the organism, even when disentangled from the abstract character with which it is invested, and when in reflection raised to a higher nature, is still, as the level of personality is reached, at no abiding stage in reflection. For an ideal presses its claim upon our thinking with a power that is irresistible. The conception of subject, if followed out, becomes more than a mere point or focus of reference for activities or events in space and time. Space and time are *for* it ; they require the implication of a subject reflecting for which they are conceived as its own facts before we can attach meaning to the words. Even the

physical doctrine of Einstein suggests this. Their characters are relative to the subject, and the subject as such is not, when adequately interpreted, in them. It is only when reflection has by an imperfect abstraction lowered its level, and has treated the subject-self as having a particular location in space and time in which it is permanently at rest in them, that they claim independence. Indeed, it is only in so far as reflection remains at the standpoint at which it treats the subject as an object which can be, as it were, held out and scrutinised, that the separation between the two is hypostatised. If our intelligence were so powerful that it could follow as far as the implications lead, it could do more than reach this final conclusion as an ideal of reflection, attained only by letting the activity of thought disentangle itself from embodiment in sensation and feeling, and in the symbols that are descriptive of them, which is our everyday plane in human experience. Instead of having to make abstractions and look towards an ideal merely grasped in its general terms, with a yearning for closer knowledge more akin to that of everyday practice, the mind would realise the impulse to seek to behold God, as it is wont, in accordance with the physical conditions of knowledge, to seek to behold man. But for us, at the level to which our organic conditions confine us, this cannot be, save through the abstract might of thought. If we would see God we must be capable of ceasing to be as merely men. There is for reflection a barrier fixed between the ideal and its attainment at the stage in the whole to which we are compelled by the finite purposes that in fact chain us to our station, and determine for us a " This " from which we cannot as mortal shake ourselves free, or do more than work out in thought the implication of its " What." Yet in images created by faith we do pass over this barrier, for what mind has itself posited mind is conscious that it has in a sense transcended. Nor is this faith a mere blind striving. It is rather the thinking which, abstract though it seems even for metaphysics, yet dominates and transforms emotion by making it the symbol of thought and the vehicle of ideals that are concrete and of compelling power, as in art and in religion. Such faith is indeed the substance of thing unseen.

But if this be the true nature of experience it must be interpreted with a new significance. It must be thought of

as being something both wider and deeper than it appears at the level to which our organic structure as living beings tends to hold us. Because I individually am dependent on a brain and senses I cannot in *direct* apprehension get beyond the degree of reality which is for me a fact of existence, the " That " of which, though partaker of the true character of mind, I can do no more than explicate the " What." It is this that is meant when it is conceded that finite mind arises through nature and implies its presence, arises and implies it as reality at a higher degree arises through and implies degrees that, while lower and superseded, are still actual and present. It is no question of causation in time of the higher by the lower. It is rather a question of " Becoming " in the sense in which Aristotle understood it, the becoming that is the activity of self-developing mind, completing itself through a succession of stages. In these, time, though a relation to the actual in these stages, is included by mind within the whole which its activity presents to itself at various degrees, instead of itself enveloping the mind that in relation to it is rather the subject *for* which time is. If this be true, universal and particular, thought and feeling, mind as distinguished from nature, are phases in a whole which in its self-completion is beyond the order of time, and is spiritual in its inmost character. Experience does not present itself consistently to us as such a whole because, although mind, we are mind which is yet conditioned in its activity by nature, and by the bodily organism which is part of nature. It is again a question throughout of degree in knowledge and reality. I am human because I habitually follow human purposes, as must be the case for one subject to physical conditions. It is just so that I exist at my stage in the hierarchy of existence. These purposes are mine inasmuch as without them I could not be what I individually am, and they hold me to dependence on sensation and feeling. But even as human I am mind that has attained to much more in the process of its self-explication. For mind, in whatever form it appears, has for its very essence and characteristic this, that it is free and capable of abstracting itself from every particular detail in its object-world, even from its own pain and its own death, and can grasp its own character as having standpoints from which it delivers itself from these.

I have now tried to indicate what is meant by speaking of experience as foundational. It is the whole outside of which I do not get and cannot get. For, raised in reflection to its highest form, all that is has significance only as falling within it. As of such a form we can present to ourselves no pictorial image of it, and yet our reflection, which is activity within experience itself, compels us beyond our present images of its contents. The completed entirety within which falls all that is and was and will be, not less than the mind for which it is there, is the whole for thought short of which thinking cannot arrest its conception. Experience though conditioned is knowledge. We must therefore abstain from trying to treat what lies at the very root of the meaning of existence as though it were itself an incident of existence. Knowledge is no property of a substance ; it cannot be called a property even of the subject. It is the subject itself in its essential aspect. In fine it is foundational, the foundation on which the finite centre rests. It is ever building up, through its own self-distinctions, the whole in which feeling and the reflection of finite mind are separated, but by a process of abstraction which is justified only by the end that it has to subserve, and that has called it into being.

It follows from these conclusions that the world is there independently of thought which is recognised as merely *my* thought, thought as discussed in the ordinary text-books of logic. What I feel and see and hear and smell and taste is actual independently of the relation to it of myself appearing as a thing in the world confronting it. This is realism of a kind, but it is a realism which finds the universals of thought as themselves present in the constitution of that world. For it imports a whole which is presented as embracing common qualities, and common qualities, as Aristotle reminded us long ago, cannot come to us through the particular senses of individuals. They are universals ; not entities apart, such as Scholasticism disputed over as being either real or else only nominal. They are universals that are inherently present in the constitution of what is singular, in virtue of its having both general and particular factors or moments.

It will be convenient to contrast this view of the Universe with others that are current. And that I may do this I must, even at the risk of repetition in different language of

some things that have already been said, look again over certain parts of the ground from a different point of view. I have just referred to the treatment of thought in the ordinary books on Logic. But these books are written from highly varying outlooks on the subject. There are the old-fashioned manuals of formal logic, founded largely on that phase of Aristotle's teaching which is recorded in his *Analytics*, as distinguished from very different phases that appear in his metaphysic and in his treatise on the mind. In his teaching of logic he seems to look on thinking merely as an instrument in our hands. Then there are expositions, such as those of Mr. Bradley and Professor Bosanquet, in which thought is looked on as belonging to a higher order, but is still investigated in its appearance as the thinking of a finite human being, conditioned by his position in nature. Finally, and different from both of these modes of treatment, is that of logic as belonging to the metaphysic of ultimate reality, a treatment in which thought is approached as being a system of abstractions, but abstractions not only from what is finite, but also from the entirety of reality, an entirety which implies a corresponding system of counter-abstractions of a wholly different character. This is the method of Hegel, to the nature of which we shall have to look at a later stage. Each mode of approach is required and is legitimate if its purpose is borne in mind. The varying modes of approach are each of them necessary, but they belong to different stages in reflection.

We start in our development as human beings from the simplest phases of our finite life. Our world begins in sentience. We first of all distinguish our sensations. These present themselves as we distinguish them, in relations of time and space. It is only by abstraction from the contents which they qualify that we come to isolate these relations and regard them as self-subsisting frameworks. They are as they come to appear only for reflection which has advanced a certain way in pursuance of an object. Within them we first conceive the feelings we have as to some extent exclusive of each other. We then begin to realise that they affect each other in fashions which we conceive, in terms of time and space relations, as those of causes or coexistences. We assume that the laws we find to be followed will hold true as our experience progresses,

and the assumption is verified as we proceed from sentience to sentience. We assume this because the basis of reality for us is progressively disclosed as inseparable from knowledge and its rationality. It is there independently of our knowledge as finite centres. We then, by reflection based on the hypothesis that these rational laws will continue to hold good, begin to predict what we shall find as we proceed to fresh experiences. We thus enlarge the meaning of the world that we are progressively finding before us. We unconsciously assume that what we first of all have before our minds, the reign of the mechanical forms of law in nature, is the important thing to look for. The view of the world which we thus get is in the first instance that of things excluding and determining each other in their externality. But it is only the activity of reflection that has taken us beyond our immediate sensations, and such reflection has at first been directed under mechanical conceptions in order to subserve practical purposes. As we go further we employ other ideas, such as those of ends, which guide us to other facts and relations when we proceed to reflection and prediction. We thus come to find the world as presenting aspects different from those that are merely mechanical. But we habitually return to our earliest tendency, for it is the one under which we first became accustomed to clarity in distinguishing. Still, even this took place only through the instrumentality of something more than mere sensation. It was the work of thought, thought that found its justification as it proceeded. We therefore go forward in the effort to range the contents of our experience under the conceptions to which we were first accustomed, returning to categories which we found to be true of the order of things, as well as reliable for predicting the forms they were assuming. It was indeed the tendency of thought, setting before itself in the first instances only limited purposes, to eliminate other conceptions of ends and higher causes as these intruded themselves. Memory, recognition, comparison of ideas, were all operative, but operative under this tendency so to represent the world as mechanistic and exclude these higher aspects. They were higher by the very fact that in the relation of the end to the means, which nature displayed as freely as it did that of mechanism, and in the relation of the whole to the parts as exhibited in what we recognise

as living, the mind was discovering as before it something more akin to its own nature than this mere externality and mutual exclusion of the constituent elements on which in the first stage we laid stress. This is the outcome of the operation of the final end that is implicit in knowledge. It was useful to treat the world as mechanical and self-subsistent. But it soon began to be doubtful whether even in practice we could treat the mind as one thing and its object as another external to it. For mind, as it more and more succeeded in reaching over its world and making it fully intelligible, was more and more finding itself; and the beautiful, the good, and the true came to be looked on as inseparable from the intelligence for which they were present. It was in this way that experience seemed to develop its fulness. Starting from mere sentience it became progressively the experience of a world containing various degrees in conception and various stages in reality. The higher the level reached by reflection the higher and fuller is this experience, and the more it becomes plain that it is only by our abstraction that we have drawn a line between experience and experiencing. The earliest form which the process of growth in knowledge assumes is that of separation in space and time, but by the embodiment of the activity of the mind in the general conceptions which it forms for itself the mind is able to get beyond what is immediate, and mediately, by reflection, to grasp the past and the future as implied by the real not less than is the present. But as sentience is of what is present it is only through the concepts of reflection that the mind can accomplish this work. Still, its activity through these concepts has no limit. They belong to the mind and they create the problems which they resolve. Their justification is that they seem, as Aristotle held, to be inseparable from the particulars of sense. For these particulars have no meaning apart from their setting in general conceptions. What is experienced is always in form individual or singular, and such that in it the universal element, that which thought grasps, is inseparable from the merely particular, in integrity with which it has reality. Experience is therefore more than immediacy, and it is only real in so far as the activity of mind finds itself disclosed in it. It is not static. It is an activity, a constant progress. It is dynamic and it seems to progress, in an effort under the

impulse of larger ends to be attained, towards the realisation of that completeness which mind would have if its world were not estranged from it by the distinctions it has itself created.

We find ourselves as actual at a certain stage in the process, a stage which is our "*That*," our point of departure. Mind and body are not two distinct things. Our bodies express our minds as their own "entelechies." But they express mind as subject to the physical limitations of the organism, which is physical not less than it is alive and sentient and intelligent. Our position in the Universe is therefore subordinate and restricted. It is because we are subject as well as substance, because we bring the Universe into the focus of the self, and because there is no gulf between the self and that Universe, that we can transcend the boundaries of the space and time that hem in our immediate perception. But it is only through conception, through indirect processes of thought, which can make abstractions and so bring to consciousness that which in reality is of the character of the universal, that we get beyond ourselves and take in the Universe in its entirety. Even the power of thinking is conditioned by the strength and health of the organism through which it functions. The state of the nervous system may make all the difference to the appearance to us of the world, and to our power of interpreting it. A paralytic stroke may destroy our capacity as men, and reduce us as living beings to the mental level of the unintelligent brute; to partial death. Beings of a different organisation and with different senses from ours might have a wholly different experience. Yet in the main the higher and most perfect characteristics of thinking would have to be for them what they are for us. Otherwise the existence of such minds could have no meaning for us, or of ours for them. We cannot even speak of them as possible, unless there is taken to be in them that which we recognise as identical with certain aspects of our own existence and the degrees of reality which belong to these aspects. It is therefore obvious that, in contemplating the possibility of any phase of experience, we think of a common basis on which all possible experience must rest, a common medium, if a dubious metaphor be permissible, within which all reality, the merely conceivable as well as the actual, must fall.

To say this is to speak of what is true of mind alone. For mind alone has quality such that its entire Universe has meaning only as falling within itself and so constituting with it an ideal and a completed whole, an end which demands full realisation, a perfection of existence with no region beyond itself even for thought. Mind so conceived by reflection can never be a pictorial object of perception. So to represent it would be to limit and transform its nature. Nor can mind at such a stage in self-realisation be merely a centre of feeling. For feeling, apart from its setting in knowledge about it, is an abstraction, and the nature of what is final cannot be of such a character. It cannot any the more be in the nature of mere thought as marked off from or contrasted with feeling. Its nature must imply the mediation which characterises the highest process of intelligence. For all its processes must be referable to the self-contained entirety that is attributed to this, the highest and final degree of reality. Eye cannot see or ear hear such, and were it not for that infinity of range which is characteristic of the thinking even of finite human beings, we could not present to our minds the abstract concept in reflection of the subject as knowledge, whose field and content are no existence foreign to its self.

Reality at such a degree, although a self-contained system, realises itself at its levels progressively, if what is no better than a metaphor may for a moment be used. And, assuming the view of reality which this book seeks to express to be right, it is obvious that reality does so, crystallising, as it were, its conceptual self-evolution at stages which are those of finite mind. Experience always has implications beyond those we attend to in everyday practice. We know only in so far as we are more than we take ourselves to be. In art and religion, as well as in philosophy itself, we become aware of this. How can the causal standpoint of physical science enable us to estimate the quality of a sonata? The higher emotions of mankind, undivorceable as they are from reflection, and inseparable, their apparent immediacy notwithstanding, from the thinking that knows no limit to its range, at moments disclose what lifts them above the ordinary level of emotion. Religion, poetry, music, and pictorial art bring feeling to a level as high as any that reason can

reach, and by reason's light set emotion for us in forms that endure.

We seek for wholes of various orders in the forms both of objects of what we call direct experience and of general knowledge, not less than in the mind that apprehends them. These wholes are, as I have said, individual, in nature as well as in thought, and they are wholes into which enter principles of general application, even in cases where the object has not the form of mind but belongs to a different stage in the hierarchy of reality. Such objects point beyond themselves towards an ideal. That is what Tennyson means when he says :

> " Flower in the crannied wall,
> I pluck you out of the crannies,
> I hold you there, root and all, in my hand,
> Little flower—but if I could understand
> What you are, root and all, and all in all,
> I should know what God and man is."

Goethe expresses himself similarly about our everyday life. It is in his poem " Vermächtniss " :

> " Vernunft sei überall zugegen,
> Wo Leben sich des Lebens freut,
> Dann ist Vergangenheit beständig,
> Das Künftige voraus lebendig,
> Der Augenblick ist Ewigkeit."

Things present different aspects of reality according to the varying degrees they embody. In our experience of them we have not departed from actual fact merely because there come occasions when they appear to us, as Browning says :

> " Changed not in kind but in degree,
> The instant made eternity."

It may assist in the discussion of an elusive topic which I have sought, at the risk of considerable repetition in different words, to elucidate, if I now try to contrast the conclusion so far reached with the views of writers such as Mr. F. H. Bradley, Professor Bosanquet, and Professor Pringle-Pattison. For although these three thinkers have discussed the nature of the finite self and have arrived at opinions from some of which I do not feel myself very far removed, there are yet points of difference, not only

between themselves but between them and myself, which seem to me to require consideration.

To begin with, for Mr. Bradley and (though of this I am not quite so sure) for Professor Bosanquet also, the nature of thought is to be relational, by which they mean that the subject in judgment is always beyond the content predicated of it, and is never exhaustible by predicates which cannot contain the whole of its nature. Thus no fact of sensible experience and no feeling can be adequately exhibited in a system of thought-content. Thought establishes relations and is discursive, and if it ceases to be this it ceases to be itself, and yet if it remains this it cannot present what is immediate. On the reality and immediacy of sentience they lay great stress. And so they hold that to enable thought to attain to complete presentation it must cease to predicate, it must get beyond mere relations, it must reach something other than what we usually mean when in everyday practice we use the word truth. It desires to reach a whole which can contain every aspect within it, but, if it is to do so, all that distinguishes it from feeling and will must be absorbed, and thought must therefore have changed its nature. In a mode of apprehension which is to be identical with reality, predicate and subject in judgment and not less than the whole relational form, must be merged. I think that these sentences, so far as few words can suffice, summarise the position on the question stated in Mr. Bradley's *Appearance and Reality*.

Now the first thing that strikes me about the argument is that all the thinking of which we have any experience by its very character implies mediation and a process of establishing relations. If we are debarred from relying on the predication which is the inseparable form of judgment as it is for us we therefore cannot think in any adequate fashion, and consequently we cannot investigate the nature of the real at all. It is true that the form our thinking assumes is dominated by varying ends. At times and very frequently our purpose is simply to distinguish the predicate from the subject and make definite thereby what has been added to knowledge. We isolate the thing of which we speak, so that it may be shown as independent in its essential nature from what we say about it. "The sun has set." The sun is the subject in this

judgment. Its setting is a separable phase which is predicated with the implication that it represents only a transitory state of the sun's appearance. A mere feeling of sunset would give us no knowledge. We want definite knowledge. Consequently thought assumes the form of what is sometimes called judgment of the understanding, in which the subject and the predicate are held asunder. But reflection always discloses that such judgments are only valuable for limited use. The fuller truth lies in the more extensive reflection which shows the sunset to be merely an incomplete phase in a physical system, a large whole in which it gets a new significance. To regard a judgment as a self-contained and final movement of mind is to hypostatise an abstraction. For judgment appears to be rather the exhibition in thought of the enrichment of the subject by its being brought continuously into relation with a larger whole, in which subject and predicate are aspects in one entirety which is their further truth. With this provisional whole reflection does not stop. It goes on to predicate of the so enriched subject yet more, and extends the significance of the original whole. That is inherent as what is called the dialectical quality of knowledge. The sunset turns out to be due to the rotation of the earth, which will for many hours obscure the sun from the place where I am. It is only for the sake of distinctness of conception that we pause over the fragmentary and crystallised judgments of understanding. Under these we abstract and hypostatise, as we do, for instance, when we regard things arithmetically with reference only to their numbers and not their qualities.

Mr. Bradley, of course, is well aware of this tendency of thought, which he regards as an inherent defectiveness. But he is not content to put it down to the influence of contracted purposes, an influence which thought might shake off by altering these purposes. He holds that for the apprehension of true reality, as distinguished from appearance, a form of apprehension is required other than the thinking which is for him in every phase inherently conditioned by a relational character. The form required must be one in which apprehension is immediate, and is not mediated by reflection. Subject and predicate, sentience and thought, must not be separated in it. Nothing short of the avoidance of this will enable the mind to attain its

ideal grasp of ultimate reality in its fulness. Such a perfection of knowledge is for Mr. Bradley not incapable of being conceived. It is, indeed, suggested by knowledge as we find it, for in that knowledge we have experience of ourselves as impelled to seek to overcome defects, and to reach a result in which knowledge can rest just because in it absolute reality is felt as much as thought. Such knowledge is an Other for which human knowledge searches, yet it would be, if attained, akin to our human knowledge, though differing from it in having transcended the unending relational form. We should in that case have an experience which, it is true, we cannot have under existing conditions. We cannot, starting from ourselves as finite centres, represent a perfect experience in an image, or even construe it reflectively in its detail. But we infer that if we could attain to such a stage we should have reached knowledge of a kind which must be more than feeling, just as it must be more than relational thought, a knowledge in which idea and reality would come together in an identity " not too poor but too rich for division of its contents."

What troubles me in this is a difficulty in following how the author of *Appearance and Reality* can legitimately get as far as he does, or indeed escape the precipice of a complete scepticism. Another feature in Mr. Bradley's system is that in which he lays emphasis on a principle of degrees with which I am in whole-hearted agreement. But I find difficulty in reconciling it with what I have just referred to. The problem of philosophy is there, in his view apparently, not the explanation of genetic evolution in time, but the explanation of degrees of completeness in thought and its objects. Now it is only by the instrumentality of thought itself, as we know and rely on it in daily life, that we can even attempt to realise this principle. On thought we are absolutely dependent. It is only in terms of thought that any kind of reality can have meaning, or that any significance can be attached to its existence. Experience itself is penetrated through and through with such thought. Behind it we cannot get. There is a passage in Cardinal Newman's *Grammar of Assent*[1] in which that acute critic puts very simply the root difficulty

[1] Fourth edition, p. 61.

which confronts those who would cast doubt on our experience :

" We are what we are, and we use, not trust, our faculties. To debate about trusting them in a case like this is parallel to the confusion implied in wishing I had a choice whether I would be created or no, or speculating what I should be like if I were born of other parents. '*Proximus sum egomet mihi.*' Our consciousness of self is prior to all questions of trust or assent. We act according to our nature by means of ourselves, when we remember or reason. We are as little able to accept or reject our mental constitution as our being."

My experience, even conditioned as it is by my position as a living and intelligent being in a world in space and time, and by the physical limitations of brain and sense with which I was born, is thus my foundation. I can, it is true, get beyond my limits through thought, which takes the form of conception, and fashions universals which carry me far beyond immediacy. But in the actual exercise of my activity in thinking, as distinguished from its quality and range, I am subject to physical restrictions which nature imposes. Thought is trammelled, yet not more than trammelled, by the demands of time and space. For it is no sequence of events in these ; it is for thought that even they are there and possess meaning. In the natural execution of our limited purposes thought, therefore, assumes a relational form, but this is a form which does not exhaust its nature.

It was a conviction similar to that of Cardinal Newman which led Hegel, when he wrote *The Phenomenology of Mind*, to protest against the idea of treating knowledge as something by itself, or as a mere instrument which the mind could hold out for independent examination in a stereotyped aspect, and criticise *ab extra*. Kant had tried to do this, and in the *Phenomenology* Hegel denounces the attempt. For the latter the only thing that could exhibit the real nature of thought was itself. Its criticism must therefore be the self-criticism to which it subjects itself in observing the correction of its own abstractions which experience discloses when we let it tell its own story, by unfolding to us in our observation forms or stages

ranging from substance to subject. For him thought assumed the relational aspect which the judgment of the understanding aims at, but only as an aspect transitional to the stage at which it comes to comprehend itself as embracing all relations within it as its own creation. Knowledge was therefore, for Hegel as for Aristotle, foundational to reality itself, and not a particular fact embraced within it. For if it is taken to be such a fact, and as such may exhibit a relational character which precludes it from even abstractly reaching what is final, it follows, as Mr. Bradley holds, that the ultimate reality, the Absolute, must be another kind of experience, qualitatively and possibly even numerically differing from our own, and standing to it in a relation which excludes any approach or participation that can be made intelligible. The self we experience and know is for such a doctrine mere appearance, a construction of reflection chained to the finiteness of the centre to which it belongs. Reality is Another, and is unattainable by the very knowledge that professes to deduce its existence. It is difficult to see how such an entity apart can have even the significance which Mr. Bradley and Professor Bosanquet assign to it, or any real meaning as an intelligible foundation for the Universe. Such a view is far removed from that which finds in actual experience degrees towards a fuller and completed knowledge of the same nature, and which looks on the ideal for which it seeks as immanent in, and not as apart from, the experience of which in thought it is the completion.

In the second series of his admirable Gifford Lectures Professor Bosanquet seems to me to come near to this latter view, and my only difficulty about what he writes is to read it as consistent with his interpretation of thought as inherently defective. The finite individual, he declares, is more than merely finite, and has a capacity in thinking which goes beyond what is finite. " It is freely admitted," he says in the second lecture, " that in cognition the self is universal. It goes out into a world which is beyond its own given being, and what it meets there it holds in common with other selves, and in holding it ceases to be a self-contained and repellent unit." He does not find the distinctness of finite centres a difficulty. For " the pure privacy and incommunicability of feeling as such is superseded in all possible degrees by the self-transcendence and

universality of the contents with which it is unified." These contents are " organs of self-transcendence." " Feeling," in order to be capable of utterance in determinate form, " must take an objective character. It must cease to be a blank intensity, it must gather substance from ideas." And in so doing it " must change its reference to self, or modify the self to which it refers. Different persons are organisations of content which a difference of quality, generally, though not strictly, dependent on belonging to different bodies, prevents from being wholly blended." " We do not experience ourselves as we really are."

Professor Pringle-Pattison has given a full exposition of his conclusions about God and the finite self in the Gifford Lectures to which he has given the title of *The Idea of God.* It is a book the acute insight of which is matched by an admirable literary form. For him finite personality is not what it is for Mr. Bradley and Mr. Bosanquet, a mere construction of thought based on sentience in a finite centre, but a self-sufficing entity. The problem of how such an entity is related to the Absolute is for Professor Pringle-Pattison inscrutable by human thought. It cannot be that of substance to substance, for in the first place he is critical of the application of the conception of substance in this connection, and in the second place God is not for him to be regarded as in any sense whatever finite. Yet he holds that it is of the essence of the self to be exclusive of other selves, and, although he admits that this cannot be so in the relation of man to God in the same fashion as in the relation of man to man, yet how it can be different in the case of God is one of the things which he declares cannot be explained and must remain a mystery. For he finds each finite self to be unique, an " apex of the principle of individuation by which the world exists," a " separate and exclusive focalisation " of the Common Universe. The self or subject " is not to be conceived as an entity, over and above the content, or as a point of existence to which the content is, as it were, attached, or even as an eye placed in position over and against its objects, to pass them in review. The unity of the subject, we may agree, simply expresses this peculiar organisation or systematisation of the content. But it is not simply the unity which a systematic whole of content might possess as an object, or for the spectator. Its content, in Professor Bosanquet's

phrase, has come alive; it has become a unity for itself, a subject. This is, in very general terms, what we mean by a finite centre, a soul, or, in its highest form, a self."

Professor Bosanquet, in passages other than those I have quoted earlier, lays stress on the characteristics of the subject as such in the self, but these characteristics are for him not final. Experience has a larger meaning in which they are transformed, and in some sort exist transformed in the Absolute. The first form, therefore, does not represent the full or the actual reality. It appears as it does because of the operation of a thinking which consists in for ever establishing relations that are themselves not finally real, and the self is a construction through such relations, and as such is adjectival.

For Professor Pringle-Pattison the self is impervious, not, it may be, to all the influences of the Universe, but to other selves, "impervious in a fashion of which the impenetrability of matter is a faint analogue. In other words, to suppose a coincidence or literal identification of several selves, as the doctrine of the universal self demands, is even more transparently contradictory than that two bodies should occupy the same space."

For myself I cannot think that either of these views is satisfactory. They have this in common, that they both question the competence of thought to solve the problem of the nature of the finite self and of its relation to the Absolute. For in one view the finite individual is a construction of relational thought, which by reason of its inherent incapacity cannot attain to the path by which alone reality can be reached. In the other view the metaphors used seem to me merely to disguise the suggestion that selves are in truth mutually exclusive units the relations of which can be truly assigned to positions occupied in time and space. They are thus in effect brought under the category, not of subject, but of substance, however different be the name which is given to it. The self so regarded is of a nature differing *toto cælo* from the self regarded as one among many but explained to be so regarded only provisionally, and because reality is taken at a certain stage or degree which is short of that which belongs to it when more fully comprehended. Now the doctrine of degrees seems not only to get rid of the difficulties arising from apparent

exclusiveness which impress Professor Pringle-Pattison, but to restore thought to the position of respectability from which Mr. Bradley and Professor Bosanquet depose it. Intelligence is not the less intelligence because there are aspects under which it presents itself to itself as participating in the character of an object in space and time, or as conditioned in the way we find it described as being in the logic-books. For the individual man, notwithstanding that he is also the subject in knowledge, cannot escape from the fact that the knowledge is *his* knowledge, the mental activity of a particular individual, whom the psychologist, by applying his abstract methods, may regard as possessing that knowledge as a property or quality, and whom, if we abstract from what is indeed of the essence of his personality, we must look on as an organism or even as a thing with attributes. It is so that the category of substance inevitably introduces itself. In finite knowledge, that is to say, knowledge the activity of which is conditioned as it is with us, this will always be the case. For our basis is to start in time from what we directly feel, from what our organism brings to consciousness, and the process of our knowledge is one which develops the implications of what thus seems to come to us from without through the channels of our senses. But in developing these implications we are not extracting externalities out of externalities. We are rather bringing to light principles which are implicit as foundational to even the simplest aspect of experience. Among these principles is the presence at every stage of the subject moment in experience. As we reach the higher stages the far-reaching character of this moment and its unity with its object become more and more apparent. Experience is a single and self-contained entirety, although it has thus many aspects and degrees towards perfection. And it seems to me to have in no phase any meaning except as mediated by thought and interpreted by the only form of thought I know, the thought which is progressive and can set before it nothing short of the completed whole that is the ideal towards which it aspires. That whole can surely be neither unmediated feeling nor, at the other extreme, an intellectual *totum simul*, unchanging and inert. It must rather be, in a completed if ideal form, just the activity that expresses and develops itself in us, in

varying degrees towards perfection in the experience in which we who are its members and creatures participate. It is the system of that activity which is the interpretation and foundation of the Universe, that in which being and knowing are not exclusive or apart. Philosophy, Religion, and Art alike appear to guide us towards this result.

I will now sum up its conclusion before bringing this chapter to its end. The world that confronts me is actual, and is independent of me, its observer. But that is not the last word about either that world or myself. Both belong to a greater entirety. It is only in so far as they fall within the field of knowledge that they have any meaning or are. The difficulty which realism has had in admitting this has arisen from its assumption that knowledge is the property and instrument of a finite self, the means by which an independent knower lays hold of what is actual apart from himself. But this assumption not only makes the knower different from his knowledge, but implicitly treats the knower as a substance of which knowledge is an activity or property. The knower is thus regarded as finite. In a sense this is true, as we have already seen, but only when we are concerned with aspects that are far from representing the whole truth. Knowledge cannot really be an instrument wielded *ab extra*, because it is that within which all reality, whatever be its nature, falls. Moreover, knowledge cannot itself be expressed in terms that go beyond itself. It is the foundation of all reality, of the percipient mind, whether nascent or fully developed, as much as of that which is perceived. Because, at the stage at which we exist as individual human beings, it expresses itself in the form of an organism, the conscious self makes itself actual in finite form, the form of the intelligent self with a physical aspect. This fact is its "That," from which we start and must start, and our task does not go beyond the explanation of what it signifies. One thing which such explanation brings to consciousness is that knowledge has different orders, and is always relative to the order in conception and the standards with which it is concerned. The limitations imposed on the activity of our minds by the organic conditions under which they think prevent us from being at all times and under all circum-

stances aware that this is so, or that in the form of our knowledge as so conditioned, which we call our experience, there are always implicit not only the conceptions of a single order but those of many orders. It is by making use of a single kind of conception, and assuming it to be exhaustive, that we come to think of the mind as one thing and its object as another thing, with knowledge as a property by which the first can reach the second. But closer attention shows that mind is much more than an individual thing and, taken apart from the abstract fashion in which we are apt to regard it, is not different in nature from knowledge itself. Our experience is thus potentially and implicitly complete knowledge. It is our human conditions that prevent it from becoming this explicitly. Yet, inasmuch as we are inherently more than we take ourselves to be, no ideal short of perfection in knowledge can ever satisfy us.

Just as difference of order in thought appears in the experience of the finite individual, so it appears as difference of order in mode of existence and meaning of the object that confronts him in space and time. For that object too falls within knowledge, and is characterised by the various levels which knowledge reaches in it. Mechanism and life and intelligence as appearing in the object-world are all equally entitled to be called real. It is only by abstraction from the fulness of our experience that we set them up in our descriptions as independent and self-subsistent entities. For, like thought itself, experience is always dynamic and never static. The dialectic of its activity is everywhere apparent.

That we should be aware of an external world is therefore, contrary to what is commonly supposed, no fact that can be resolved into something antecedent to itself in logic or even in time. The actual problem is to bring out the implications of this awareness and its significance. Neither Plato nor Aristotle nor Plotinus was troubled by any such problem as subjective idealism raises, any more than have been those writers of modern times who have denied that knowledge is a mere instrument. They would all of them have equally refused to join in the attempts of Berkeley and Hume, or in the attempts of the New Realists of to-day, to bring awareness under mechanistic conceptions. The way that is better than

any of such attempts is surely to refuse to depart from belief in the reality of the world as it seems to us, or to allow ourselves to be debauched by undue indulgence in the metaphors that give plausibility to such attempts. The world is there as it seems, and it presents itself to us in orders of knowledge and reality all of which are in their own places valid and actual. That is why it is essential that we should understand and hold firmly to the great principle of relativity. For it is only by doing so resolutely that we can hope to shake off the effects of the metaphors in which distorted views have been suggested to us.

The further problem that remains if we have succeeded in this is to make clear to ourselves what the foundational fact of knowledge really imports. If we throw aside the physiological and psychological metaphors with which it is commonly sought to invest that fact, it remains apparently plain that we still have to look for its nature in our own experience changed rather in degree than in kind. But then degree means everything when we are concerned with the immanence of meaning which we discover. We are not indeed driven like Plotinus to reject, as an obstacle to the grasp of mind in its highest conceivable form, any possible relation to an object. For if that relation falls completely within mind, as one established by itself, it is no more than a distinction which in being established is transcended. We may be content with Aristotle to regard mind itself as activity, as in all its forms essentially Becoming, and its ultimate character as being that of thought which thinks itself and finds itself in its object. The conception of mind at such a level seems to be forced on us when we turn reflection in upon itself. The significance of what is sometimes called divine immanence is the recognition that the orders in the knowledge of the finite self are explicable only as partial expressions of higher orders which reveal themselves to reflection, and in which the distinction between thinking and what is thought is in the end and ideally superseded. It is only through such a conception that the foundation of the Universe appears to become intelligible.

In the final result the character of what we perceive may be put thus. We find before us existents which seem independent of the apprehension of the observer, but

which resemble in character the thoughts of which he is aware in his own mind. These they resemble particularly in that they are always breaking out into relations, and in that the relations which they so disclose are, like those of the thoughts about them, intrinsic to these entities, and not existences independent of them. If I say that my notion of something is that it is this particular definite thing, that implies that it is distinguished from some other thing different from it. Neither thought has its meaning or its reality independently of the other thought. So it is with its object in nature also. A black thing is only what it is when contrasted with white things. A change is only a change relatively to what does not change. A single thing is what it is only when contrasted with a plurality of things. The more we consider what we apprehend as being objects in any experience of nature, the more we see that they are what they appear to be just in distinction from objects that appear differently. Relativity is everywhere obvious. It is inherent in the order of nature just as much as it is inherent in the order of knowledge. It is only through judgments of contrast that the distinctions between things which exist in nature have any significance for us. The "root" from which nature springs and the "stuff" out of which it arises are thus analogous to the "root" or "stuff" from which our thoughts arise. Both possess the characteristics that are distinctive of mind. If there be no problem that can be rationally raised as to why we know, what we are left with is thus nature that is inherently of the character of mind. Of course my thoughts do not make the things I individually see, but, on the other hand, the character of the things I see, when I apprehend its full significance and implications, is not a different one from that of my thoughts. It is only under my abstractions that the two seem foreign to each other, abstractions which are made for various purposes in the progress of an effort towards a more exact understanding of reality, and which, in the course of this effort, come to stand for degrees of unreality. The doctrine of physical relativity is just a special case of the general principle. If we approach nature by what aim at being strictly objective methods of approach, such as that of Professor Whitehead, we seem to come to just the same thing in the end. There is a root which

branches into reality of two descriptions, and these are of characters that are not different, and in which mental and non-mental are not distinctive terms. That is why, for instance, space and time are found to imply each other, and why in the general investigation of nature what we seek to arrive at is always meaning.

CHAPTER X

MANIFOLD ORDERS IN KNOWLEDGE

It is now time again to approach the principle of orders in thought. The first observation I wish to make is one by way of reminder that conceptions or categories of different orders may operate at the same time in our experience. A man may be thought of from many standpoints, the selection of which depends on the aspect of his personality our purpose is concerned with. It is only when we take our conceptions in abstraction from the individual form in which alone they attain reality, a form that implies particularity not less than the universals in which it is set, that we get these conceptions as apparently exclusive. Their logical character is that of being definite and general, and they are so far exclusive. But we cannot present to ourselves these pure abstractions, or even think about them in isolation. For all our thinking implies imagery, an image that coming under a concept gives actuality for us to that concept, but does not lose its character as an image. When I speak of a circle I imagine a circle-like appearance. There is no such thing in experience as a perfect circle, nor can I construct a mental picture of one. But I can fashion in my mind or on paper an effigy the importance of which for me in the connection in which I interpret it is only that it is a sufficient symbol of a conceptual meaning in my reflection.

I am free to direct my attention as I choose. If my purpose is logical or mathematical reasoning I select the point of view that is proper to my purpose, and apply the general conceptions that are relevant and are of the order that is appropriate. That is how I come to identity and correspondence. What determines the relevancy and appropriateness of these conceptions is of course not arbitrary on my part. I am actual only so far as I am, not merely subject in reflection, but just as much an

object in a field of experience within which it is conditioned by its surroundings. Even for my mind its individual freedom is limited by conditions. They extend, not merely to what is spatial and temporal, but to the entire content of the experience within which I reflect. The further I get from presenting myself to myself under the aspect of mere substance, and the nearer I come to the full realisation of my nature as subject in my knowledge, the more there sinks out of sight the view of myself as an individual whose thought and activity belong to the contingency of events and whose spontaneity is controlled from without. If I could present in reflection only the view of myself as subject it seems as though there would be no significance in the notion of a plurality of minds, and so none for arbitrariness in thought or volition. These imply my existence within a world of objects. But I cannot present to my mind such a view, even though the ideal to which it points me may be true and the possibility in abstract reflection at least of such a standpoint is necessitated as that from which alone a thoroughgoing explanation from above is possible. For I am, when all has been said, still an individual sitting in a chair, and what I can do is no more than to think of myself as requiring for interpretation of my full significance orders of thought which include the lower ones distinctive of such physical things as myself and my chair. All actual experience is not only in its details concrete, but implies a multitude of conceptions which pertain to the different levels from which it can be approached. The individual thing before my eyes has many aspects.

When, sitting here, I look out of the window I see how true this is. The earth in the park is hastily taken to be inorganic. But a fuller and more searching experience tells me that this is an altogether inadequate account of it. For the earth, in the first place, contains a multitude of micro-organisms, and there is also no part of it which does not owe its form to the intervention of living beings, whether these be worms or gardeners. Again, even the inorganic has, as part of its existence for me, colour and weight and shape, and these are appearances which vary with the particular relation to the percipient. Every phase of apparently inert matter is relative even for the individual onlooker.

When I follow this out it becomes fairly plain that my hasty view of what I call inorganic matter was an abstract one, and quite inadequate to the riches of what I perceive. The modern electrical theory of the constitution of matter resolves apparently ultimate particles or molecules, and reduces them to central corps of positive electricity surrounded by clusters of electrons, composed of negative electricity and rotating round the corps. But who has ever seen or felt an electron in isolation? Matter of any particular kind is really in the nature rather of an event which requires time for functioning, and does not in its scientific description present us with the last word. It is by inference, as the result it may be of "a welter of differential equations," that we get at the notion of what is to-day talked of as its final meaning in terms of a magnetic field. We certainly do not experience this directly, although we read about it in books. Its scientific character is an inference of a highly abstract though very valuable kind. Physics is conducting those who pursue it further and further into the notional regions of mathematics. Even the new branch of learning known as "Physical Chemistry" is of this sort. No set of images is any longer insisted on as adequate to molecular structure in chemistry or to its laws. The images employed are more and more treated as merely symbolic of more general and therefore more abstract concepts. It is certainly not in terms of such remote notions that the plain man interprets what he fancies he sees in the flowerbeds, and has taken to be inert components heaped together mechanically. In nature the inorganic is an idea, like that of bare space, got by abstraction from a greater fulness of reality, and is a useful working hypothesis for limited purposes, but not adequately or accurately representative of all the phenomena that belong to the actual. Its real significance is in final analysis negative; it is that of an environment which we hastily assume to be outside and independent of the scope of the activity of life.

We present to ourselves pictorially our meanings and the interpretations which we form in our minds about what we see or hear or feel or imagine. What we think may have been a result reached only indirectly by reflection. It may be, for example, the reference of the phenomena of the material world to electrons which can

be described only in highly general language. But even of such electrons we persist in forming some kind of image, unconsciously but assuredly. Now such images are of course misleading, unless it is always borne in mind that they are but symbolical of what is general in concrete universals. For the actual, even when it is a mere mental picture, always has in its nature the moment of the particular. Even if I say of anything just that it is here or now I say what is untrue, for by the time I have spoken the words it has become there and then. The descriptions are in terms that are of necessity general, and they do not exclusively govern the particulars. They are forms in apprehension which belong to reflection.

Yet they are essential to the actual. It is intelligible only as possessing such forms. We may call them relations. They are, however, relations which enter into the events we observe and apart from which these events could not be apprehended. That is what is meant by calling them intrinsic or internal. But no event can be so apprehended except as in a duration, a merely *specious* present, which imports change. When we try to fix this in an image in order to preserve its permanent or universal aspect, we transform it. It is thus that images which are used to symbolise the universals of reflection, or the relations that remain identical through changes in what is related, are apt to mislead. They do not adequately represent the actual in our experience. Some external symbols are indeed so ordered that they do not profess to do more than symbolise. The name " square " does not mislead when it calls up the image of a square. We know that what is important is only to be found in the definition which the name connotes, and that this definition is of general and not of particular application. In the case of a number also we are not misled, unless it be by looking on it as the indication of a stage in the counting of particulars, whereas modern mathematics has extended the connotation to the description of the relations to each other of classes or collections. But with most names it is otherwise. They call up an image, and the image is not a distinct guide to the reality.

Thus it comes about that the process of naming calls up more than universals, and that as we use words in our trains of reasoning we think pictorially. But as such

pictures, which naturally stand for actual and individual objects of experience, contain in their constitution orders of thought of more than one kind, our images are misleading in a more subtle fashion than that just alluded to. For they suggest as applicable orders of thought other than those appropriate.

It is tempting to express oneself in images, for they lend a vividness which is a great adjunct to style. Moreover, they are suggestive of feelings which cannot be described abstractly. In art they are therefore essential. For in art the mind expresses itself chiefly in apparently direct feeling, and although its quality carries us beyond the particular it is not in the form of abstract concepts that it does so, but in the form of values which are foundational to artistic quality.

However, in scientific description values of this kind are not what we are seeking for, and the power of imagination has to be kept in restraint. The metaphors that arise out of the images we call up, even in the strictest thought, are a special source of danger in scientific and philosophic investigation. Because they are metaphors, and therefore representations of what embodies the standpoints of many orders of thought, they are slippery as symbols for the standpoint of any one particular order. When we say of God that He is a Spirit we glide easily into regarding Him as a "magnified and non-natural man," instead of as the ideal completion of immanent mind. If we talk of a "finite centre" as a form of consciousness we are trying to describe, we slip into words which lead us to the treatment of feeling as though it could be a mere object, self-subsistent apart from any subjective moment. And yet we know nothing of the jellyfish that seems to possess this, nothing of whether it has consciousness that though restricted in scope is yet consciousness, or of whether the jellyfish has any feeling at all. The expression "finite centre" is a metaphor which suggests an object in space, and unless closely watched the name conducts us towards what are mere metaphysical superstitions. The same thing is true of such metaphorical words as "instant," "point," "cause," and "soul." They are useful if we bear steadily in mind that they really indicate conceptions that belong to certain orders in reflection only, and not separate elements in any individual fact.

Without such metaphors we cannot get on. They are even more required in the interpretation symbolically of our thoughts to others than for our own thinking. For the latter purpose, however, they remain essential. In the exact sciences the endeavour is made with some measure of success to get over the danger of misleading suggestion, by the adoption of special and technical terminology. This is no doubt of great use, but it is never wholly successful. The terminology of chemistry, for example, calls up at every turn mental pictures of atoms and molecules and structures of which we have and can have no direct experience. That such ideas should be true in fact is a valuable working hypothesis. It suggests a set of general conceptions through which the chemist can harmonise and extend his knowledge. But if he claim more than this kind of merely relative validity for his theory he comes into sharp conflict with his next-door neighbour the physicist, who will have none of his idea that the chemical atom can stand for more than a mere step towards a deeper conception of matter. And the physicist in his turn is pulled up by the mathematician and the metaphysician, and held tight until he admits that he, too, has been dealing only with provisional abstractions from concrete actuality, and that all he has reached is a further set of general notions of merely provisional application about certain relations which experience implies.

Probably no branch of the human endeavour after knowledge has suffered so much from the dominance of metaphor as has philosophy. In this region images do not merely mislead. They render interpretation immensely difficult. Beauty of literary style in philosophical writing is not uncommon, and such writing often exhibits a latent poetical gift that is highly attractive. From the Berkeleian imagery of feelings and ideas as the signs through which God is manifesting Himself to us, to Hegel's famous description of the consummation of the absolute end as consisting in the removal of the illusion that makes it seem yet unaccomplished, the history of philosophy contains a long record of splendid metaphors. But the first of these examples, if accepted in its literal implication, leads us straight to scepticism, and the second to the notion of the ultimately real as a *totum simul*. Neither consequence was intended by the writer of the words from

which they follow, nor will such a consequence follow if the image is stripped of its misleading colour, and interpreted as only symbolic of what cannot be painted in words as a picture of any actual experience. The reasoning would not seem so convincing if the colour were stripped away. But this circumstance does not detract from the real truth, which is that the metaphors in question produce their powerful influence on us simply because they stimulate our imaginative faculty, and so appear to deliver us from the necessity of bearing, without an aid that is as artificial as it is trying, the hard but necessary burden of holding as tight as we can to exact and therefore abstract conceptions.

I am far from wishing to suggest that any branch of description, or even of human thought, can get on without a copious employment of metaphor. That is because the actual is always concrete. But the fact remains that the actual does imply in its meanings and in itself relations which are the embodiment of what reaches over the particularity to which reality owes an integral aspect, but only an aspect, of the form in which mind construes it.

This conclusion brings us back to the source of all our difficulties, the apparent finiteness of the mind which must express itself through a brain that not merely lives but knows. That brain, like the human organism itself as the entirety within which the brain has its function as a member, is no external instrument which mind wields. While it lives and works its significance for us lies in the intelligence which it in itself expresses. This significance is inseparable from it as a fact in experience. But the brain is mind only in an aspect of its existence, which is but one among many aspects. The organism that sits in a chair may be regarded from other standpoints, from which it is, for example, a thing that will one day become merely such, and be carried away in a coffin. The character of being a living organism, and *a fortiori* that of being experienced as an intelligent one, terminates with the change in nature called death. The skeleton which till then was a member of the living organism drops on that event into the different character of being a mere mechanism, an imperfect one too, for the end is no longer operative which fashioned its development, and to serve

which the living self-arranging activity existed. So it will be with me some day, and I shall become for others an object belonging to a different order in experience from that to which I belong to-day for myself as well as for those others. Moreover, alike as I am now or as I shall appear when dead, I shall have ceased to be as I appear now, an object for myself.

Such ceasing to be will have its consequences in the changed experiences of other finite personalities. My death I can myself, however, contemplate from a different point of view. The event when it comes will occur for me as within my object-world. But I am more than that object-world. I have aspects which belong to an order of thought higher than that through which I interpret myself as the individual sitting in this chair. My personality implies concepts which are of a quality different from those of the here and the now. I interpret what I am from above downwards. My personality is not intelligible when regarded as merely built up from below out of fragments that belong to externality. It is in my mind, in so far as that mind is more than a mere object and is not less the subject-self in which experience centres, that this experience has its genuine situation. Subject and object are only intelligible as phases falling within a higher entirety. That entirety is no thing. It is nothing out of relation to mind ; it is of the character of subject ; it is the expression of the activity of thought. Within the field over which it reaches are reality and unreality, time and space, truth and error, righteousness and sin, beauty and ugliness. These and all other distinctions fall within and not without its field. Such personality is more than individual ; it is rather super-personal. Higher aspects of reality than those of the daily life of a living and intelligent organism are immanent in the self-knowledge which expresses itself in me. That knowledge extends in principle to the entire universe, for that universe has no significance except in terms of its concepts.

Apart from this view of the self and the content that is immanent in it, the doctrine of orders or degrees in knowledge and reality alike appears to be unintelligible. But, once accepted, that doctrine and the consequential character of all experience which it carries with it seem to become not only intelligible but inevitable. The view

of the self to which I refer throws a new light on the meaning of what we call evolution.

Like the phenomena of the rest of experience those of evolution disclose relations belonging to varying orders of reality. There is the mere externality to each other of the periods in succession. There is the development due to the control by a quasi-purposive yet unintelligent end. This may be operative from the very beginning, and may still require for its accomplishment a tract of time. It may act long before it is fully accomplished, as it does in the embryo which, though undeveloped, is yet *in posse* the complete human being, or even in the picture or the poem in which the idea which requires the complete work of art for its full embodiment yet may disclose itself as a semi-conscious inspiration by that idea in early and imperfect stages. The end as final cause thus seems to act although distant in time and in space also from the culmination of its operation, and to differ in this respect from the efficient cause of physical nature. The developments which its operation brings about are thus akin, in the conceptions required to render it intelligible, to the conceptions which belong to the life and the sphere of the organic.

It is important to keep such distinctions as these sufficiently closely before our eyes, if we are to estimate aright the appeals made to us by those Victorian men of science who asked us to interpret life, not through the conceptions which its obvious facts force on us, but exclusively through those of physics and chemistry. I am not referring, in saying this, to the author of *The Origin of Species*. Charles Darwin laid the foundations of much that is characteristic in the doctrine of biological evolution as it is coming to be formulated to-day, formulated as comprising in its reference ends as well as outside forces. That was because he studiously confined himself as closely as he could to actual circumstances which his genius had enabled him to detect where others had omitted to observe them. Towards the end of the book Darwin tells us that all he has sought to do is to show that species have been modified, during a very long course of descent, by the preservation through natural selection of many successive slight favourable variations, and that the theory of descent with modifications embraces all the

members of the same class. He believed that animals have descended from at most only four or five progenitors, and plants from an equal or lesser number. But nowhere did this close observer say that he had found life originating from anything but life, or interpretable as mere mechanism. His doctrine does not carry him beyond the facts of life, or suggest any conceptions lower than those which belong to life itself.

I am thinking, when I refer to biologists of the Victorian period, of others than Darwin, men of high science, but with a passion for the principle that progress in time is continuous in only some single and isolated order of knowledge, and does not take place by breaks ; a passion which gave rise to the superimposed conviction that all progress can be represented as a putting together of an aggregate, higher simply in that it is more complex, out of elements which in an earlier period existed as separate mechanical units in a framework of external relations. But these elements are in truth inseparable save in reflection from a larger standpoint with which they are always actually associated. Knowledge may increase in its quality and in its range, and, in so far as it does, may exhibit conformity to a principle of continuity. But this continuity arises out of what is of its own nature, and can be rendered only in terms of itself. Of course there is always much in knowledge that is implied but not yet fully developed, and this may be latent so far as consciousness is concerned. But even so it is still of the nature of knowledge, although the aspect may appear to be throughout mechanistic. In so far it resembles life, which also can be expressed only in terms of the conceptions of life, and never in terms of what is merely mechanical. How low down in the scale of quality we find what is actually knowledge and marks off conscious purpose from both mechanism and life, it is not easy to be sure. Does the bee act with knowledge when it leaves its hive, and goes to the heather, miles distant, afterwards to return laden and unerringly find its home ? Is it under the guidance of consciousness that it constructs the comb with an exactness which rivals that of the most highly trained artificer ? Probably not ! The quasi-purposive selection is here, as far as we can judge, unconscious. Ends are operative, but ends of a nature differing in

characteristics from those which form the ideal for intelligence, as well as from the even lower ends which realise themselves merely in the conservation of itself by the whole in bare life. Instinct and knowledge, however difficult to distinguish their results may at certain points be, seem to represent separate stages in the influence of ends in the actual world, degrees in the actuality of final causes which differ in character and in kind, and the higher of which are irreducible to any results of the lower. In time life never grows out of mechanism; in time knowledge is never an effect of the action that is merely living, or even merely instinctive. Nature exists continuously in time. She does not proceed *per saltum*. But her continuity of growth is a continuity within definite orders, each of which has its own significance and not that of another order.

In evolution there always appear to be relationships that are more than those of one order. Our experience displays a development which belongs not merely to time, but to mind also, for which time is. The higher stands to the lower at once as that in comparison with which the lower is less perfect because more abstract, and also as the more concrete individuality within the limits and range of which the lower falls. Thus, as we have seen, the bare event is only an abstraction from the reality of that event in its relations, and experience as Berkeley imaged it was only an abstraction from the significant experience in which its meaning was as much its very self as was the factor of immediate feeling. Mere static being is the outcome, as abstract as it is unreal, of the attempt of the mind to break up the flowing character of actual experience into isolated instants and points. Experience itself finds its logical and factual completion in the mind for which it is experience. And mind itself has its truth in that higher aspect of its meaning in which the object and subject worlds arise only by distinction made within itself in the course of the activity which is of the essence of reflection.

It is thus that in analysis the different orders in knowledge and reality alike appear to manifest themselves, and it is thus that knowledge and reality turn out to fall within a single entirety. The relationship, as has been already observed, is not one of time. The sequences may

even apparently invert those of the time-order. They do not really do so. For it is through these very sequences in reflection that the time-order becomes intelligible and actual. The ultimate relationship is one of conception, of the distinction of abstractions, and of their integration in interpretation from being only abstractions from what is more concrete and therefore more true to the character of all reality. Such a relationship in thought was called by the Greeks dialectical. The explanation of its essence lies in its insistence that all explanation is one of self-developing activity, and must be derived, if it is to be adequate, from what is higher, as the key to what is only a fragment of its riches. "The fashion of this world," said Goethe, "passes away, and I would fain concern myself only with that which is abiding." And in another passage the same great critic of human experience reminds us, in his *Sprüche in Prosa,* of that which illustrates the underlying principle of what is characteristic in his teaching: "What appear to be intelligible causes lying close to hand we can grasp, and they are therefore readily interpreted by us as being such; for which reason we gladly take that to be mechanical which is in truth of a higher order."

The higher in order is also the more concrete. It is the more individual; not only individual as being a thing marked off from other things, but individual in the sense of its reality embodying more perfectly the union of particular with universal in what transcends them both, reconciling their apparent antithesis, and disclosing its own activity as the true source of the distinction between them. We cannot see or hear the real at these its higher levels, but however high the level it is capable of grasp by thought, for it is only in so far as its orders belong to thought that it is intelligible, and has what we mean by reality. The scepticism which denies this capacity of thought denies its own power of explanation and contradicts itself. The method of mysticism is hardly less one of negation, and it is thereby that mysticism plunges itself into inconsistency. Not feeling but reflection alone can indicate the difficult and steep path which must be ascended if the ultimate character of reality is to be reached. For reflection has created all the problems, and their solutions must be fashioned by itself.

Our experience is a stage, but a stage only, along the path towards what reflection can accept as full comprehension. For in an experience in which everything is in relation, and feeling is marked off from thought by reference to organic conditions, the ends which control us as particular existences compel us to treat the self to which the experience is referred as itself object within its own experience. That there should be degrees and distinct orders in our experience thus becomes inevitable. We are finite and conditioned by the character of the organisms in which we express ourselves in our aspects as phenomena of nature and so in space and time. In order to get clear knowledge we finite beings have to limit our endeavours and our purposes. We start from where we find ourselves. The starting-point is the "That" of experience. We are what we are, and we cannot take in at any one moment all the forms of what it is abstractly possible for us to perceive. But not the less the power of reflection in conceptual form is so free from hindrance that it can pass beyond the limits which our contact with nature through the limits of our senses imposes on direct perception, and that it can interpret, indirectly and by reasoning, the universe, as not made up of the fragments we see and feel and hear, but as the larger ideal whole towards the realisation of which reflection ever presses in its efforts to attain to complete experience. Such a whole knowledge seems to presuppose as the foundation of the orderliness of existence and of the uniformity of nature. It breaks it up no doubt by abstractions, made for the accomplishment of purposes which if essential are temporary, into aspects which it isolates from each other, and which individual freedom varies. This it does in order to make practicable distinctness, not only in pictorial representation, but in the reflection which is, after all, that of a mind subject to bodily limitations of its power. The partial aspects so presented owe much of their fragmentary character and mutual exclusiveness to the imagery that goes with sense-perception, but in the end they really owe their quality to the particular conceptions or categories to which reflection has temporarily abandoned itself, in order to divert its result from much else that is possible, but is irrelevant to the purposes of the particular effort at interpretation that is being made. Each aspect may thus

be seen to stand for a stage in reflection and to belong to a degree or order in experience. Its general character is what it derives from the category or conception by which it is confined and distinguished, and the working image is formed accordingly.

Our presentations owe their separateness and apparent conflict to the fact that they are distinctive of their own orders or levels in reflection and in the experience which is fashioned by reflection. They are brought under the general conceptions with which reflection operates when it confines itself to a particular order of thought. When we reflect we abstract, that is we exclude from our attention all that does not concern our present purpose, and we generalise and construct in reflection only under the logical conceptions that are appropriate to our standpoint. Thus when we study a human being we may for one set of purposes treat him as a system of matter and energy, for another set as living, and for a third as a self-conscious and free personality. If the principle I have just been stating be true it is a sheer fallacy to assume that because one of these views of him is, taken by itself, justifiable, the others are therefore false. Each may be adequate in the order in experience with which for the time being we are concerned, and for each view what appears for the moment to constitute truth and reality may be accurately described in terms of the conceptions appropriate to the standpoint which we are occupying. But this, of course, can only be so if we have remembered that truth and reality imply still more than what in virtue of our abstractions they are being taken to amount to, and that therefore no single order of conceptions can be adequate to complete study. The abstract views obtained by the application of categories or particular orders must, in other words, be taken as representing, not separate entities, but separate kinds of knowledge about reality. This is what is implied when we accept the general principle of the relativity of knowledge.

The importance of the doctrine of degrees in knowledge, truth, and reality is that it insists on the conclusions of our various inquiries into what appears directly to confront us as being in fact the outcome of a series of experiments and processes of observation and reflection by which we have stripped the actual, and presented it through our

various sciences in exclusive aspects due to the confining effect of abstraction. We do not take in all the phases of our object-world at one and the same time, nor can any single phase be for us exhaustive of the facts as they are for knowledge of other orders. Even within a particular order this may be so. The revolutionary changes which Einstein has introduced into the mathematical theory of the forms and measurements of space and time, were introduced by showing that conceptions belonging to customary mathematical physics had been applied in a fashion that had rendered them too narrow for possible aspects cognisable within their own order. The general fallacy into which we are apt to fall is that of hypostatising conceptions which special sciences have framed for their own purposes in interpretation into images supposed to be exhaustive of final reality; whereas in truth such conceptions are only the means by which we concentrate attention, and by an interpretation, the apparent clearness of which is due to the ease in application that results from its narrow demands, enable ourselves to frame images and make predictions. The images so framed are the main source of our difficulties. We must always be on our guard when we detect ourselves indulging in the temptation to stereotype a general principle into an imagined picture of reality.

No doubt it is difficult to resist the tendency to express general truths in metaphorical form. We start in our experience from the recognition of things as separate from each other in space and time, and we tend to come back to this, our original and natural form of experience. But if we construct spatial and temporal images of qualities and relations that are for logic only universals, we are, however inevitably, robbing them of that in their nature which constitutes them universals. They become when visualised mutually exclusive and repellent entities. Now it is just this character which is foreign to the nature of thought, in which the universal has its real home. Our daily experience as men and women teaches us that in our thinking even our most precise and definite concentration is never of an exclusive character. Our thinking is always carrying us beyond our frame of mind at the moment. It seems to reach beyond every phase which it isolates in general conceptions, so long as they remain general in their

character, and are not stereotyped into images separated in imagined space and time. Even in the latter case they carry us beyond themselves, for they are symbolic of more than they can express. Our thinking becomes distorted and inadequate if we fail to realise that it is only by the recognition of larger wholes than those with which for the moment we are concerned that truth is to be reached. That is why we distinguish men and women into narrow-minded and large-minded, and approve what we call a "synoptic" view when we hear of it. In so doing we recognise the dialectical character of knowledge as essential in it.

The conclusion of the whole matter thus seems to be that thought, the nature of which is to be dynamic and not static, and to tend in all cases to pass beyond the result which it has attained, is in constant process of unfolding further conceptions than those on which it concentrates. These further conceptions may belong to the same order in knowledge or to other orders. In the actual object of experience the orders are concurrent, even if only implicitly so. In one or other of them we abstract from the context and form images which are exclusive in the sense that they are determined by the particular conception that has guided us in framing them. They are therefore inadequate to the full truth, the ideal of which is always a larger and fuller whole. What is abstract and so inadequate is thus the outcome of the process of judgment at its narrower stages, and the inadequacy and abstractness diminish as our judgments complete themselves. That is why we are always more than we seem to ourselves to be. It is of the essence of mind that this should be so.

As we exist under conditions arising from the particularity of the organisms in which minds are expressed and have plurality as objects in nature, we are hampered in our freedom of thinking by what is not separable from the character of mind treated as a finite centre. But we are none the less more than finite centres and than mere monads to which, in effect, the category of substance has been applied in defining them. For thought does not consist in any simple series of events in time. It is that the correspondence of which discloses true identity as the foundation of difference. In so far as we think and

know we are more than finite individuals. Identity of thought brings each of us within a single universe, the foundation of which is that conceptually it is the same for all of us, and that outside it we cannot travel even in reflection. Its recognition as concerned with the entirety is indeed the foundational basis of reflection.

How is this universe to be conceived? Only by an abstraction that is inadequate can we regard it merely as a possible object confronting intelligence. For within its scope falls intelligence itself, subject not less than object. And it is in the aspect of subject that it has its characteristic as the entirety within which every distinction falls.

From this point of view the theory of the relativity of knowledge derives a meaning wider than that which the physicists give to it. It delivers us, in this extension of its meaning, from difficulties even greater than those which trouble the physicists themselves. For it shows us that the material and the spiritual are not separate and self-subsisting facts, but are illustrations of different fashions in which reality presents itself when regarded from standpoints divergent in the logical character of their methods. There is no more striking illustration of the difficulties that arise when this wider significance of relativity as the principle is not realised, than the particular problems connected with human personality.

Among the useful illustrations of the confusion of thought that arises when the aspects of such personality which belong to one order of thought are assumed to be cognisable in terms of conceptions belonging to another order, is the controversy as to determinism. Are our acts of will brought about by antecedent conditions, or are they spontaneous in the sense that they are uncaused? The true answer seems to be that the question is irrational, inasmuch as no problem of cause and effect can arise. Volition is inherently the activity of reason. In the exercise of reason we may err, just as we may sin. But the exercise is that of the creative activity of mind itself, an activity that is not an event apart from the mind that exercises it. We are rational in so far as we express reasoned judgments. They may be right or they may be wrong. But they are not the effects of causes external to them. It is the analogy of space and time relations which has misled here. Mind exists in its judgments, not apart from them.

There is no difficulty in accepting this fact if we do not drag in physical analogies, and represent to ourselves mental processes as aspects of reality at the level where causation is fundamental. *I* think, *I* judge, *I* will. We are here concerned with no phenomenon of nature as stretched out in a series of objects independent of each other, but with subject as such, an aspect cognisable only in terms of conceptions which are appropriate to itself alone. The principle of degrees guides us in this instance as elsewhere. Thought is neither determined *ab extra* nor is an uncaused phenomenon of nature. For its character is that of subject, and the minds of other men must be interpreted in the same terms as my own, terms which recognise that I find the mind which is myself in other minds, expressed no doubt in organisms external to mine so far as they are merely physical, but more than merely physical in so far as they express thoughts and a freedom of self-determination corresponding to and by so much identical with those of which I am conscious in my own self.

The principle of degrees thus lays unreal spectral appearances which are only alarming because they are bogies which we have ourselves conjured up. It teaches us that the whole of the mind is present implicitly in every particular activity of the mind. It bids us look away from the analogy of mere sequences of events in time as inadequate to what we are observing. No doubt psychology does often treat what it calls the phenomena of mental action as if they could properly be so named. But valuable as is its method, in the same fashion as is the method of the chemist who investigates the chemistry of the living organism of high value, the method cannot be applied except by making violent abstractions, useful from the points of view of other sciences, but inadequate for that from which we seek to observe the ultimate character of reality. It is not by treating mind as an external instrument, but by watching the self-explanatory development within as well as apart from self-conscious activity, that we get at its characteristic nature.

The history of speculative thought is the narrative of a series of efforts to replace the inadequate method of explanation from below by the exhibition of the lower orders in thought and their contents as abstractions from

what is higher and in reality more concrete. The actual is in this view under all conditions what must in the end be stated in terms that are those of the domain of mind. The effort to do this has always shown itself to be attended with a certain danger. We are prone when we make it to try to exhibit the source of our experience as something different from what knowledge reveals, an absolute, it may be, which our individual knowledge either cannot wholly compass or which, if attainable, is only to be attained by some method differing for us wholly in character from any with which experience has made us familiar. Metaphysicians, by tacitly introducing the notion of the source of human experience as something of a different nature from itself, have carried the idea of the difference so far as to suggest a separation which is nothing if not numerical, and which suggests the introduction of the category of substance by the metaphors employed. But it is not such a category as substance that can be adequate in this connection. What we have to do is simply to observe the various orders in reflection as they are exemplified in what we know, and to distinguish them, not as separate existences, but as disclosed simultaneously in the actual. They are not only appearances. They are all essential inasmuch as mind has to recognise them all as present in the constitution of experience. To anything beyond that experience and separable from it they do not carry us. They only exhibit it with new meanings. The higher the order necessitated for reflection the nearer we come to the recognition of that ideal adequacy and completeness which forms the ultimate standard of truth.

If knowledge were some sort of instrument distinct in existence from its object, this view would give rise to difficulties. The question would arise whether there was not some kind of reality existing independently of the subject in knowledge. But if the distinction between the subject and what appears to confront it is a distinction which is due to reflection itself this question does not emerge. For knowledge, taken in the wide meaning in which it includes the various forms of subjective activity, appears to be foundational, or in other words presupposed as the very commencement and condition of experience. The object-world is of the same character as the self for which it is there, and both of them fall within an entirety. To

ask how it is that we have any knowledge at all is to put a mistaken question. The relevant question is how knowledge is confined by the organism in which it expresses itself. Knowledge is itself a final fact. Knower and known fall within it. That I see or feel or hear the world, or that I transform it conceptually, is an ultimate truth which cannot be explained as the result of anything beyond itself. The object-world is actual apart from the percipient and reflective organism. So far this is realism. But it must always be added that it is only at a certain stage in reflection and by the employment of certain concepts that the distinction between knower and known arises. It is a distinction which is characterised by relativity. The more we reflect and the more complete the grasp of knowledge the less the differentiation seems justifiable or of importance. The further we proceed the more does mind find mind in what confronts it. If we take self-consciousness and eliminate, as far as our habitual modes of framing working hypotheses permit us to do so, the idea of a thing in space confronted by another thing, we must find ourselves concerned with thought and no longer with externality. Even the physical doctrine of relativity forces this on our attention, and leads us towards the view that the question between idealism and realism is an idle one. The actual is meaningless except in terms of knowledge, and that knowledge can only describe itself if the full variety of its orders is recognised as essentially implied in it.

PART III

OTHER VIEWS ABOUT THE NATURE OF THE REAL

CHAPTER XI

GREEK PHILOSOPHY

In the preceding chapters I have examined from a modern point of view the principle of degrees in reality, and the question of the relation of mind to the object-world which the doctrine appears to necessitate. In the present chapter I wish to illustrate what I have said by pointing out that the conclusion reached is not peculiar to modern tendencies in philosophy, but is to be found in unmistakable substance in the ideas of antiquity. I propose to take as my main illustrations the teaching of Aristotle and of Plotinus respectively.

One has always to be careful not to read into the language used by the Greeks more than is really there. But it is at least clear that they were more free than we are from certain hindrances, amounting almost to obsessions, which impede modern thought. Their philosophy is, if on this account alone, particularly instructive when we have to try to realise the true character of the relation of the mind to what it knows. For the methods of physical science had not progressed with them so powerfully as to make it hard to break through what has grown into a habit, and to look on thought and what it apprehends as in a relation quite different from that of causal activity between things of foreign natures. In common with the New Realists of to-day the Greeks did not hesitate to find universals in the object-world, as real as any particulars of sense. Relations were for them actually present, just as they are said to be by those New Realists who have thrown aside the prejudices of the crude and empirical realism of recent times and have declined any longer to try to separate the non-mental from the mental world by assigning to the latter exclusively universals, and attributing to the former a particularist nature accessible only through sensation.

It is, as I have already insisted, only a superficial prejudice that leads people, in reading the history of philosophy, to seek for the mere supersession of system by system. In science, which is to a great extent dependent on exact observation and measurement, a subsequent result, founded on more precise experiment, may wholly displace an earlier view. In the history of art, which does not depend on the recording of quantitative facts, I pointed out that the standard of truth about value is a different one. And I added that in philosophy, which looks for larger wholes, and for orders in arrangement beyond those inquired after by physical and natural science, the student who seeks for the most adequate light on the nature of reality is no more safe in disregarding the past than is the student of the history of literature. The story of the growth of philosophy must be read in the entirety of that story, and it may be found that far back even the greatest conceptions have been attained. For philosophical insight of a high order is not like what results from a successful experiment in the laboratory. Its principle is of a nature more akin to the insight of a great literary critic, an insight which remains of high value for all time. The world will continue to read Plato and Aristotle and Plotinus, just as it will continue to read Homer and Shakespeare and Goethe. The fashion of the period may have wholly passed away, but there remains an underlying substance of a quality that is abiding.

It is characteristic of the most mature forms of Grecian thought to decline to look for the final reality of the universe in an experience built up by the aggregation and succession of simple and self-subsisting units external to each other. A real so constituted would for them have been a uniform structure of a single nature. It would have had no transition in it, no dynamic character of becoming instead of merely being. It would have existed as possessing in all its aspects a nature wholly alien to that of the mind which observed it. Accordingly the difficulties that have driven us moderns towards subjective idealism as a possible way of escape from captivity to space and time did not trouble the Greek philosophers nearly to the same extent that they have troubled us. For Greek thinkers, those like Plato and Aristotle at all

events, found no such apparently final line of demarcation between the object-world and the mind that knew it as should make them desire to resolve either into the other. They did not consider themselves called on to attribute much of the world of nature to the subjective activity of intelligence. They thought it natural that such a world should disclose features differing wholly in kind and quality, irreducible to each other and including phases of an order as high as that of the Platonic Ideas. For them attempts to apportion reality and to share it between a mental and a non-mental world were without importance. One reason was their freedom from the obsession that mind must be a sort of substance operated on *ab extra*. For Aristotle, to quote him as the example, when we know we take in what confronts us. But for him, as for Plato before him, what confronts us is no mere aggregate of atomic particulars. It is a real which is of a character akin to that of mind itself.

Aristotle refused to countenance the treatment by his great predecessor of the Platonic Ideas as if they could be immobile existences apart. He did not wholly reject the Platonic doctrine, but he regarded experience as not disclosing the gulf between the Ideas and the extended world which that doctrine seemed to him to imply. For him form was not separable from its matter. The latter was the merely possible, which was just a stage in a continuous translation towards actuality, characteristic of a process of Becoming which had the realisation of form as its determining end. It was a logical evolution in which there was no hiatus. Even matter itself was not a sheer negation of the actual; it was a stage on the road in thought towards the actual. In the language of modern idealism matter and form were logical moments in the process of the actual rather than separate elements in its constitution. Thus the educated man was one with whom it had throughout been possible, because of an inherent capacity, which was other than the limited potentiality of the brute, that he should become educated. He stood as form to a possibility which was implied by the fact of his having become educated. While Aristotle would not, like Plato, regard the Idea as a universal subsisting by itself outside sense-experience, and while he regarded our knowledge as beginning in time with experience through the senses, he

yet agreed with Plato in thinking that the non-sensible form was present in the object and in all knowledge of it and remained unaffected through changing experience. The Universe could thus be looked on by him as containing within itself successive phases in the transition to more perfect form. But these phases were no results of causation in space or even of mere passage in time. They were capable of definition only as levels at which thought was progressively real in things and things in thought.

Although in studying Aristotle one finds the substance of this doctrine, and is impressed with his desire to insist on it, yet his reader has to recognise that he was not always successful in making it a matter of what appears like consistent presentation. It is only necessary to examine the writings of the various commentators on his system in order to see that, in expression at least, he was often ambiguous. Zeller, for instance, in the exposition of Aristotle's principle of the *Primum Mobile* in chapter vii of the volume on Aristotle in his *Philosophy of the Greeks*, says that he confines the function of " the Divine Reason to a monotonous self-contemplation, not quickened into life by any change or development," and so " merges the notion of personality in a mere abstraction." Quoting Aristotle's own expressions he points out that the latter declares that " God moves the world in this way; the object of desire and the object of thought cause motion without moving themselves." " The final cause operates like a loved object, and that which is moved by it communicates motion to the rest." This, says Zeller, is so obscure as to be almost unintelligible to us. Commenting on the opinion so expressed Dr. Edward Caird, in his searching examination of Aristotle's doctrine in vol. ii of *The Evolution of Theology in the Greek Philosophers* (Lectures XIV and XV), points out that such a new kind of action, a self-determination which is above movement or change, can only be one which is purely ideal or spiritual, such as that by which we set before us an end, and make it the object of endeavour. This, he observes, is impossible to take as adequately representative of the activity of a perfect being, for there can be no external end or independent final cause of activity for such a being. Aristotle felt himself forced to represent it as one which

was in the world and not in God. And he therefore failed to show either how the spiritual being can be conceived as originating such movement or change in a finite world, or how he is himself related to it in any way.

Still, writes Dr. Caird, it is evident that Aristotle does conceive God in a higher way. He likens the Universe to an army, the excellence of which lies in its order, but is separately embodied in the General through whom the order comes into it. He takes Aristotle really to mean that although God cannot think anything lower than Himself, such as is the finite world in space and time and contingency, He can still think of it in its order, in the types that are realised in it. The Divine intelligence must therefore have been really conceived by Aristotle, not as an abstract self-consciousness, but " as gathering all the ideal forms that are realised in the world into the unity of one thought." And in support of this view he quotes passages from the *Metaphysics*. The difficulty, he goes on to add, arises for two reasons. The first is the tendency of Aristotle to the dualism between a pure intelligence which is eternally one with itself, and transcends the distinction between subject and object, and the other is the conception, not consistently eliminated, of a world of change, made up of parts external to each other, and failing to attain unity. The ideal form is looked on as complete in itself and not as realising itself in matter. Form and matter are never brought completely together. The second reason to which Dr. Caird draws attention is due to the tendency of Aristotle to set up an abstract opposition of the theoretical to the practical, of contemplation to action. The result is the division of God from His world, and of reason from volition. Nevertheless Dr. Caird thinks that Aristotle had in his system the sense of a more thoroughgoing solution. Idealism, he says, " will not fear to admit the reality of that which is other than mind, and even in a sense diametrically opposed to it ; for it rests on a perception that these are yet necessarily related, and that both are different and correlated aspects of one whole." It is true, he thinks, that Aristotle maintains the existence of a material and therefore unintelligible element in the Universe, corresponding to our sense-perception of the particular. But fuller insight, he considers, was not far from him, " for it is not difficult to

see that his conception of the finite world makes it the necessary correlate of his conception of pure self-consciousness, and therefore not really independent of it or separable from it." Like Spinoza he holds that "he who loves God cannot desire that God should love him in return." Thus he tends towards something like dualism. But there are passages, he says, in Aristotle which point to a fuller meaning. In the concluding sentences of his 14th Lecture, Dr. Caird makes this observation: "Indeed, if we were allowed to take such glimpses of truth as if they were equivalent to a clear vision of all that is involved in them, it would be difficult to prove that there has been any progress in philosophy, or even in human thought; or that the latest philosopher has gone beyond the thoughts which presented themselves to the first men who reflected upon their own nature, and upon the nature of the Universe." Here Dr. Caird takes a view which goes beyond that of Zeller and some other commentators of great authority. But his book is so admirable that I have cited it, for it offers an interpretation which, while caution is enjoined, teaches us to read Aristotle free from the tendency to think that, because the Greeks had not the orderly view of experience which the progress of subsequent science has made possible for us moderns, we are therefore to read them as though the great problems of reality were not realised by them.

With this word of reserve it may be said, I think, truly that a great lesson which Greek philosophy insisted on remains but little assimilated. It is that the distinction between percipient and perceived, established as it is in knowledge, is the work of knowledge itself, and cannot be examined without a preliminary inquiry as to the nature and relation to the entire Universe of that knowledge. Not only for Aristotle, but for the great schools of those under the influence of Greek thought who came after him at an interval of four centuries, Plotinus and later on Proclus, it seemed impossible to assign to mind any position except that of the *prius* of things. Whether with Aristotle we call this *prius* the Active Reason or with Plotinus the One, the point remains the same. *Esse* is *Intelligi* only if *Intelligi* be taken to mean what is fundamental in experience after the abstractions arising from a biological idea of the self have been eliminated as mere derivatives of

reflection. It is because of the rigour of this elimination that Greek thought seems obscure and like mysticism. And yet the metaphysicians of Athens and of the later Neo-Platonic schools were only expressing what their close reasoning had forced on them, when they proclaimed the apparently first to be truly the last, and reason finally developed to be the foundation of the apparently causal process in the scrutiny of which reflection had dragged the work of reason to light. For them the most significant moment in the real was the universal, brought to light in abstract form by the activity of thought, thought which was as much of the essence of the object as it was of the perceiving mind. The modern scientific tendency to reduce all conceptions to those of externality and cause and substance was not a tendency which embarrassed the Greek spirit in the way in which it embarrassed the reflections of those who were to follow up its working. The distinction between subject and object was one which for thinkers like Aristotle and Plotinus was present to their minds. But it was a distinction falling within knowledge, and the reason why it was forced on knowledge they found in their respective interpretations of the mind of man as conditioned by the realisation of itself in the organism, and of the soul as the entelechy of just that organism. If we may call them idealists at all—and ordinary realists they certainly were not—their idealism was of a distinctly objective type. They were no epistemologists who sought to treat perception as an instrument through which an independent reality was reached. Perception was for them a feature of an entirety within which percipient and perceived alike fell, and in which the constitution of both, with the apparent antithesis between them, was to be sought. In perception the mind found what was of its own character, and the conditions by which it was limited were of its own imposing.

It is when Aristotle is so understood that we cease to be surprised at finding in him, as something naturally arising, an early form of the doctrine of degrees in knowledge and reality. He is well worth study in this connection to-day. He was free from the difficulties which attend modern idealism of the subjective type in giving what we feel to be its due to the actual world. But that was because he held facts to have their foundation not

in matter but in form. Experience was for him a process of progressive interpretation in the Becoming, which was of its essential character. He had inherited from Heraclitus the belief that nothing stands still, and he had added that all that is exhibits stages in development from capacity for form to form completed. With Goethe in "Eins und Alles," he could have said:

> "Nur scheinbar steht's Momente still,
> Das Ew'ge regt sich fort in Allen,
> Denn alles muss in Nichts zerfallen,
> Wenn es im Sein beharren will."

The highest possible form was for Aristotle the First Mover, the activity which experience reveals. Its nature was to be that which alone was complete, in the sense of being a perfect whole, νοῦς. Development towards the fulfilment of ends was the process of existence, a process which naturally disclosed stages. All other sources of activity, the causes that are efficient but material, he treats as falling short of complete reality, and subordinates to final causes. Action at a distance presented no difficulty, because the Universe was for him ideal throughout its existence, and fashioned and operated on by ends that were inherent in it. What he speaks of as the Active Reason, the highest and final form of creative activity which Reason assumes in both knowing and being, is for him the foundation not only of the object-world, but of the Passive Reason that appears at the stage in which mind is confronted by objects of which it is percipient; and for Aristotle experience is not intelligible on any other footing. Even if we look at the bare facts as they appear to the psychologist it is necessary, as he points out, to pass beyond explanation based on the separate senses alone. It is not enough, he says, in the case of sight, the sense for colour, or smell, that for odour, to take account merely of individual qualities which can be perceived exclusively by the senses appropriate to them. For perception is more than a matter of the outward organ. It is in the action of the mind that the unification of the results is to be sought as in a common faculty. The necessity for assuming such a faculty is for Aristotle obvious. We have two eyes and two ears and yet see and hear the objects of these senses

as single existences. There must therefore be a central instrument of sense, in distinction from the special organs, to bring together the separate communications and to unite them in the individual consciousness in perception. There are " common sensibles, movement, rest, number, figure, magnitude ; such properties being peculiar to no one single sense, but shared in common by all of them. Movement, for instance, is perceived at once by touch and by sight " (*De Anima*, II, vi, 3). Again : " When we reach the common sensibles we find we have a common perception of them which enters into all the senses, not a perception connected with some single sense " (ibid. III, i, 7). " The object of sense is in fact, at the moment when it is perceived, identical with the actual exercise of sense perception, although it is true the aspect which the former presents to us is different from that of the latter " (ibid. III, ii, 4).

Aristotle seems here to approach the standpoint, not of ordinary realism or of subjective idealism, but of an idealism of an objective character in which the mental and the non-mental are not divorced, and subject is not treated as independent of object. The universal is not, as with Plato, an entity apart from the particular, but is present as inseparable from it in the singular. The real is individual, and the mind encounters what is of its own nature existing in the object of perception. He does not stop at this point. He has so far brought knowledge and its object into a common medium, for all knowledge is concerned with the universals which the constitution of experience implies, and he explains how this is possible. For him mind and its object, as I have already observed, are not two things apart in space or time, with the relation between them regarded as causal. He rejects in effect the category of substance in this connection. Knowledge and its object are, as the words I have quoted indicate, identical in their difference. The explanation he places in the foundation which he attributes to all reality. The highest principle, that which underlies Becoming, and realises itself in the mind that knows, is always and exclusively *νοῦς*, the activity of thought that thinks itself and is the *primum mobile*, the origin of all form as well as itself the perfection of form. Matter is thus an abstraction made by and within mind, and is

what is to be regarded as the starting-point in an intellectual process which extends from that which is merely possible to the completion which the possible presupposes as the foundation of its very meaning. When the highest stage is reached form and matter, and mind and its object, are at one. The attainment proceeds by degrees or stages which cannot be represented as related through a mere transition in time. In his *Metaphysics* (e.g. Book ix, chapter 8) he seems to indicate that he holds such expressions as "cause" and "priority" to be ambiguous, and that actuality is to be looked on as in truth prior to potency. He explains (Book xii, chapter 7) that "thought thinks itself because it shares the nature of the object of thought; for it becomes an object of thought in coming into contact with and thinking its objects, so that thought and the object of thought are the same." What makes them seem to us different is, he explains in the concluding words of chapter 9, that the stage in which matter is wholly transcended is never reached in human life, and that objects therefore present an appearance of compositeness which is foreign to the divine thought that is foundational.

I have referred to Aristotle particularly because, although he was a systematic observer of nature, the interpretation he offers of the character of the world within and without our finite minds was but little embarrassed by difficulties which press on modern men of science. Our absorption in the methods of physical science has led to great advances in knowledge. Experiment and exact observation have transformed certain of our conceptions of truth and have given us further standpoints of great value. But we have paid a price for this. The category of substance has become unduly dominant with us. It has created a tendency to regard everything from a single set of viewpoints, and to reflect as though there were only one kind or level in thinking. Aristotle suffered from the want of our exact knowledge in his speculations about nature. But he enjoyed a compensation. It was easier for him to realise that there were more aspects involved in being actual than only one, and to accept the principle that knowledge and reality alike exhibit stages, distinct in kind, which must be estimated by applying different conceptions and different

standards. His doctrine of final causes freed him from difficulty in accepting what was in the nature of action at a distance. The form of final cause which he called "entelechy" was conceived by him as of a character wholly different from that of the mechanical relations to which the followers of Bacon were later on to confine themselves almost instinctively.

But despite these advantages he was weighed down with difficulties from which the progress of observation and experiment has freed us. To-day the world is assumed to be throughout an orderly world. The more searching our investigations the more thoroughly have they eliminated apparent gaps in the sequences of mechanical and biological phenomena alike. The sequences may be of different natures and may exhibit different principles, according as they are sequences in mechanism or in life, but they are of their kind, so far as experience carries us, unbroken. Uniformity within the several orders of existence seems to us to reign in nature undisturbed within each order. For the Greeks this was not clearly so. The range of their special sciences, from mathematics through physics to biology, was very limited. There were gaps everywhere, and the different aspects of reality were not clearly distinguished or ranged under the conceptions appropriate to them. The consequences were what we should reckon disorder everywhere in the procedure of their scientific thought. The various fields of observation overlap. Metaphor is indulged in without consciousness that it is simply metaphor. The philosophy of the Greeks is in this respect difficult to interpret, and it is still more difficult to be sure that we are not reading into it more than is there. But, taking Aristotle's system as a whole, there are certain features in regard to which there is little room for mistake. For him it is clear that reality discloses a variety of stages, rising in thought from the deficiency of form which he called matter towards the self-completing form which is the ground and the inspiration of the activity of the whole in its self-realisation. Becoming is for him of a meaning deeper and further-reaching than any of evolution in time. It stands for the intelligible process by which thought, transcending while embracing aspects capable of presentation in time, and progressively grasping itself as form including and super-

seding the negative relation to matter, is disclosed to analysis as the foundation of every meaning in the universe, and of all that is actual within and without. The student need not worry himself over the mythological images which Aristotle is fond of introducing in this connection. It was the fashion of his age to resort to myths and to speak in what were in these days the popular modes of expression. The history of philosophy must be read, like that of literature, with reference to the usages of the time in which it was written. Underlying his language in all its forms there is in Aristotle always insistence on that ultimate identity of thought with its object, and that refusal to separate them in kind, which are what is distinctive in his standpoint. It is the human limitations which are embodied in our organism, the instrument which the reason in us has to work with, and which is inseparable from self-consciousness of experience, that prevent us from holding to these firmly throughout. And Aristotle knows this and tells us how and why it is so. The soul is indeed the entelechy of the body, and therefore from the body it is not separable in fact. It is the reality of that body, but its reality at a different and more adequate viewpoint in the hierarchy of reason than that at which things appear only as operating on each other in space. For Aristotle it is absurd to speak of the soul as moving the body after the fashion of a thing acting on another thing.

"This view," he says, "is held by Democritus, whose words rather recall the saying of Philippus the comedian, that Dædalus made his wooden Aphrodite capable of movement by pouring quicksilver into her. Democritus' explanation is in truth not much superior to this. He tells us that the atomic globules contract and move the whole body in virtue of the law imposed on them to remain at rest. But, we should ask, are these same elements to produce rest also? How they will produce this result it is difficult or in fact impossible to say. And indeed generally, apart from any special form of doctrine, the soul, so far as we can see, moves the body not in this manner, but through the agency of purpose or thought." (*De Anima*, I, iii, 9.)

Aristotle too comes well in sight of, what he indicates

with less precision but still without much ambiguity, a level at which reason does not distinguish itself from matter by giving form to it, and at which it does not find itself conditioned by any instrument which it has to use. He indicates a yet higher degree in the order of the aspects which reality implies, an intelligible completion in which knowledge is the same as actuality, and form and matter are entirely at one. This is the degree at the level of which knowledge and its object are no longer in antithesis, the stage at which thought is creative in that it actually thinks itself, and encounters nothing but itself in its object. Human knowledge, conditioned as its organ is by nature, cannot reach this degree in reality, but such thought must be assumed to be actual, for it is the foundation in terms of which alone the actual can in ultimate analysis be expressed.

This is the doctrine of Aristotle as I read him. It must be taken subject to the reservations of Zeller and the words of caution used by Caird. But the interpretation is substantially that put on it by several other commentators. Of these I know no paraphrase of the Aristotelian position in metaphysics and psychology which impresses me more than that which occurs in the little volume of a hundred and fifty pages, written as long ago as 1837, with the title *Leib und Seele*, by Professor J. E. Erdmann of Halle, and republished in 1902 by Professor Bolland of Leyden. This book brings out the principle which has always to be borne in mind by the reader of Greek philosophy, that it is not by looking at experience as consisting in a series of appearances which succeed each other in time, and are mainly quantitatively distinguished, that the facts can be accounted for, but only by recognising experience as exhibiting stages in the quality of its reality, stages which are related to each other, not causally, but in reflection.

There is another reservation which has to be recorded at this point. In his writings on logic, as commonly so called, Aristotle says a good many things that are difficult to reconcile with the main current of his metaphysics. The discrepancies can hardly be explained as merely due to the imperfect form in which the text has come down to us. In his theory of the syllogism he speaks as though the universals with which thought had to do were classes simply

as wholes of extension. This idea was fastened on by the Schoolmen, and it culminated in the doctrine of the quantification of the predicate. Small wonder that the major premise, and the syllogistic form, or what is called "linear inference" by modern logicians, have fallen into some disrepute. We need not be surprised that a generation subsequent to Aristotle should have declared loudly that ancient philosophy was just a search for universals of this kind, while modern science was a search for causes. Still, read as a whole, in Aristotle's teaching it is quite a different principle that is most prominent, the principle, namely, that the concern of knowledge is primarily and inherently, not with numerical classes, but with relations.

As I have already observed, Aristotle has no monopoly of a principle which in substance he was the first really to suggest. Plotinus, as we shall see, later on enounced it quite as definitely, and in modern times Hegel worked it out elaborately. In our own days Mr. F. H. Bradley and Professor Bosanquet have made the doctrine a familiar one, and Professor Pringle-Pattison has dwelt on it in his Gifford Lectures. I will quote from Mr. Bradley a single passage, and with the quotation I will close these references to Aristotle, making only this brief comment. One has to be careful not to read the statement of Mr. Bradley which follows as to the principle in its modern form as if one could find it as clearly in the statements of a philosopher who wrote more than two thousand years before. But Mr. Bradley had himself, as he has told us, inherited his doctrine of logical stages from the idealism which culminated in Hegel early in the last century, and that idealism treated its own doctrine as derived largely from Aristotle. It is therefore not without authority to support me that I seek to connect the standpoint of to-day with that of a great thinker of antiquity. Now the standpoint of to-day is expressed in *Appearance and Reality* (pp. 497, 498) in words which seem to me admirable.

After saying that for metaphysics all appearances have certain degrees of reality, and that metaphysics can assign a meaning to perfection and progress, Mr. Bradley adds:

"If it were to accept from the sciences the various kinds of natural phenomena, if it were to set out these

kinds in an order of merit and rank, if it could point out how within each higher grade the principle of the lower grade is carried out in the higher, metaphysics surely would have contributed to the interpretation of nature."

And a little later:

"In a complete philosophy the whole world of appearance would be set out as progress. It would show a development of principle, though not a succession in time. Every sphere of experience would be measured by the absolute standard, and would be given a rank answering to its own relative merits and defects. On this scale pure Spirit would mark the extreme most removed from lifeless nature. And at each rising degree of this scale we should find more of the first character with less of the second. The ideal of spirit, one may say, is directly opposed to mechanism. Spirit is a unity of the manifold in which the externality of the manifold has utterly ceased. The universal here is immanent in the parts, and its system does not lie somewhere outside and in the relations between them. It is above the relational form, and has realised it in a higher unity, a whole in which there is no division between elements and laws. The sphere of dead mechanism is set apart by an act of abstraction, and in that abstraction alone it essentially exists. And, on the other hand, pure spirit is not realised except in the Absolute."

Five centuries after Aristotle, Neo-Platonism became the philosophy of the Græco-Roman world. Its greatest figure in this period is that of Plotinus, who was born in Egypt but finally settled in Rome and taught there. He died in A.D. 270, leaving behind him the materials of the fifty-four books of his *Enneads*, which Porphyry edited.

Apart from the accounts of his system given by Zeller and Caird, we possess a thoroughly sympathetic exposition of his teaching in two admirable volumes published by Dr. Inge. These volumes contain the fruits of much research, and they supplement the excellent work done by Mr. Thomas Whittaker, from a somewhat different standpoint, in his book on the Neo-Platonists. Mr. Stephen Mackenna has also rendered into attractive English the

nine books of the first set of the *Enneads* and the Life of Plotinus written by Porphyry. These versions of Plotinus are of special value to persons like myself, because the original text is so difficult as to be readily accessible in its meaning only to finished scholars.

I will first of all indicate very briefly the doctrine of Plotinus in outline. He was deeply influenced by Aristotle, whose doctrine of the relation of matter to form his own view resembled. Where he differed most from him was in refusing to find in thought conceived as thinking itself an adequate expression of the ultimate foundation of reality. For he insisted that even if knowledge is conceived as at a level where it is creative of its object, it yet exhibits as implicit a distinction from the object, which imports a limit not the less actual because knowledge itself has produced it. The ultimate foundation must therefore be regarded as beyond the form of thought as well as that of being, and as an unity which is completely self-contained and remains within itself. It is the Absolute One and the Absolute Good, according to the point of view from which it is approached in reflection.

But the Absolute so conceived is not to be described by predicates, even to the extent of saying that it is unity or that it is good. It is what must be assumed as foundational, but is in no sense substance. It has no locality. As that which all things imply and on which they therefore depend, it may be said to be everywhere. But as it is itself no " thing," it can have no spatial relation to anything else, and is therefore nowhere. It is not a cause, for to call it so would be to imply a time relation. For Plotinus, as for Aristotle, the true order is logical and is not sequence in time. The higher is the explanation of the lower, and not the lower of the higher. In the case of the human body there is separation of parts, although there is unification in what has reached even this stage only. The higher form of this unification is the soul. But souls, although they have much in common, have yet differences which mark them off as particular souls. There must therefore be a higher stage, that of the general soul. Still, although the general soul, conceived as such, is the principle of life and motion in the world, that world is other than itself. Matter thus limits form here. A higher aspect is therefore that of mind thinking itself, and not

any world separate from it, and containing all forms that are actual in time and space. But even at this point thought distinguishes itself from itself, and therefore for Plotinus it has not attained its highest possibility. This is the absolute unity, the One. But the One is not substance and it is not static. It realises itself in mind and, through mind, in the objects which are one with it. Yet even in the identity with its object in which mind finds itself, there is a duality between thinking and being thought which is indicative of a degree in reality lower than that of the One. Mind comprehends all that is in the world. It is in mind that matter becomes actual. In particular all ideas belong to it, whether they are conceived in separation, as Plato conceived them, or treated as inherent universals after the fashion of Aristotle. The relation of its Ideas to mind as an entirety resembles, not that of the parts of a spatial whole, but rather that of the principles of a science to the sum of knowledge within which they are embraced. Because the world of space and matter stands only as what is possible, contrasted with a completion which is actual, it is in the supramundane intellect that it attains reality. That intellect is essentially active and therefore productive, and is the source of the appearance of differences. The One is many, not by local situation, but in virtue of the intrinsic differences arising from the intellectual activity which belongs to its nature, activity which operates, as Aristotle had taught, on matter which is the indestructible subject of form.

In Plotinus there is prominent a mystical element. The One does not think, for it is completely self-possessed, and therefore above thought. What apprehends it must therefore be, not thought, which proceeds by distinguishing, but an identification of itself with it by the individual mind. There are moments in the history of the individual self when the vision of the One dawns on it. In these moments it seems to be passively receptive. It apprehends in an attitude which is different from that of knowledge. Such apprehension is not really a vision, for the seer is not distinguished from the seen, but has identified himself with it. In the account of Plotinus in the second edition of Mr. Thomas Whittaker's *Neo-Platonists* the author sums up at p. 103 the practical outcome of the

doctrine. "While here, the soul cannot retain the vision; but it can retreat to it in alternation with the life of knowledge and virtue which is the preparation for it." "And this" (in the words which conclude the *Enneads* in Porphyry's redaction) "is the life of gods and of godlike and blessed men, a deliverance from the other things here, a life untroubled by the pleasures here, a flight of the alone to the alone."

Of the personality of Plotinus, to which it is of interest to refer as influenced by the atmosphere in which he taught, we have a record in the life of him written by Porphyry. The latter says "that he seemed ashamed of being in the body, and that this feeling was so deeply rooted that he never could be induced to tell of his ancestry, his parentage, or his birthplace." He would not allow his portrait to be painted, asking: "Is it not enough to carry about this image in which nature has enclosed us? Do you really think I must also consent to leave, as a desirable spectacle to posterity, an image of the image?" "He abstained from the use of the bath, contenting himself with a daily rubbing down at home." Porphyry mentions that Eustochius had given him an account of the death of Plotinus. He came to him from Puteoli and arrived just in time. When he did so Plotinus said, "I have been a long time waiting for you; I am striving to give back the Divine in myself to the Divine in the All." As he spoke a snake crept under the bed in which he lay, and slipped into a hole; at the same moment Plotinus died.

It was to Porphyry that Plotinus entrusted the task of revising his writings. "Such revision was necessary," Porphyry tells us; "Plotinus could not bear to go back on his work even for one re-reading; and indeed the condition of his sight would scarcely allow it; his handwriting was slovenly; he misjoined his words; he cared nothing about spelling; his one concern was for the idea." Apparently he inspired such confidence in his wisdom and integrity that a good many people left their children with their property under his guardianship, and his house was filled with these boys and girls. "He always found time for those that came to submit returns of the children's property, and he looked closely to the accuracy of the accounts: "Until the young people take to philosophy."

he used to say, "their fortunes and revenues must be kept intact for them."

Of the *Enneads* there were six, each containing nine books. They suggest throughout the small esteem in which the author held the phenomena of space and time. Porphyry tells us that one Amelius, being scrupulous in observing the day of the new moon and other holy days, once asked Plotinus to join in their celebration. Plotinus replied: "It is for those beings to come to me, not for me to go to them," an observation which recalls what Heine declares he overheard Hegel say when vexed by hearing the vastness of the firmament extolled: "The stars, the stars! what are they but a brilliant irruption in the sky?"

It was the opinion of Plotinus that "we rise to real being as that from which we originally sprang. We think intelligible objects" (he says in the *Enneads*, vi, 5, 7), "and not merely their images or impressions, and, in thinking them, we are identified with them. Thus we participate in true knowledge, being made one with its objects, not receiving them unto ourselves, but rather being taken up into them. And the same is the case with other souls as with our own. Hence, if we are in unity with the intelligence, we are in unity with each other, and so we are all one." Here Plotinus suggests the doctrine of identity in the thought of separate persons which has already been discussed. Such individuals are for him imperfect manifestations of intelligence, rendered imperfect by the conditions of nature and of finite existence. But thoughts are not properly events in space and time. It is only for special purposes, and by abstractions such as those of the psychologist, that we treat them as such. I need not refer further for the explanation of this than to what I have already said in earlier chapters. Like Aristotle, Plotinus looks on discursive thought, which takes things in their separation and connects them externally to each other, as a limited and therefore imperfect manifestation of mind under finite conditions. Such thought is not, however, a property of the organism regarded as a thing. It characterises the higher level of personality. At a still higher level in mind the barriers that divide us from objects and from other persons would vanish, and intelligence would know itself in its object, not discursively but directly. We should thus reach self-consciousness that

knew itself and recognised itself alone. And beyond this, according to Plotinus, there is a yet higher level or degree at which, as I have already mentioned, for him the distinction that even a perfect self-consciousness makes within itself must disappear and the One be attained. But to reach that unity we must transcend self-consciousness and become as nothing in order to find all in God. Here Plotinus becomes a mystic. He cannot express in any but negative propositions what he strives to convey. "When the soul becomes intelligence it possesses and thinks the intelligible, but when it has intuition of God it abandons everything else," although "we truly come to ourselves only as we lose ourselves in Him." This is for Plotinus not so much a development of something new as a recovery of what is lost. For his method is to explain from above downwards, and not to build up from below. It is this form that the doctrine of degrees in reality assumes with him.

One feels that in such utterances the method of Plotinus, like that of Aristotle, was hampered by the traces of a tendency towards dualism which Aristotle never completely got rid of, and which Plotinus only avoids by taking refuge *per saltum* in mysticism. There is no thoroughgoing attempt to relate to each other the stages in knowledge and reality. Although mind is regarded as foundational the higher levels of thinking are not brought into systematic relation with those below them, so as to exhibit mind in nature and nature in mind, and their apparent divergences as the outcome of reflection under organic conditions. Moreover, the artificial form of the Aristotelian logic made the task of doing so more difficult than it might otherwise have been. For that logic treats thought as discursive and as operating formally through inherent separations which belong essentially to judgments of the understanding. As a consequence, while the doctrine of degrees was a vital one in their systems, we do not find it consistently and fully developed in the writings Aristotle and Plotinus have bequeathed to us.

Aristotle and Plotinus spoke in the philosophical dialect of their times. It is not our dialect. The words they used often suggest ideas about matters of fact which have long since disappeared under the scrutiny of exact observation. But just as it matters little to the student of

literature whether the story of *Hamlet* is true, so the question whether Hellenist philosophers were well furnished with accurate scientific knowledge is not the main question. Philosophy has always to turn to science for material. It cannot interpret with full usefulness unless it is in possession of the real and exact facts to be interpreted. But then every branch of the sciences has its own principles and its own outlook. The task of philosophy is to ascertain how far each science embodies standpoints adequate to the whole truth, and not merely to abstract and partial aspects. What is the kind of knowledge that the physicist can offer? His details may be never so right, and yet he may have escaped from a merely partial statement of truth not so much as has his metaphysical predecessor with details throughout erroneous. It is the character of the principles applied and the stage in knowledge reached that matter here. A Tyndall may well have got to no higher a stage in this connection than a Lucretius. The range of his conceptions may have been no wider and of no higher an order. The penetrative power of thought, itself of developing capacity, may be unlimited, if fully wielded. But the hindrances of finite nature, the confining character of the brain and the organism, may have prevented him who tries to wield that power from developing it fully, and with it the range of the conceptions of which reflection is capable. It needs a larger survey than one only from a single point of view to embrace the whole truth. For that truth makes itself manifest in many and varying degrees of reality. It is neither this nor that. It reaches over their distinction and character. We have, if we would be sure that we are not confined by trammels, to compare standpoint with standpoint, to study, as a whole and in their relations, the various phases through which the history of thought has passed, and to read the great writers in the spirit in which we approach literature, the spirit of search for high quality in conception.

What, indeed, we have to look for is the standard of this quality. The metaphors may be those of a past age, the science may be so obsolete as to be unworthy of the name. And yet, in the insight into the real nature of the problem of reality, and in the comprehensiveness of the answer offered, we may have a solution which penetrates more deeply into the true constitution of the Universe than the

partial aspect of that constitution presented in the work, more accurate in observed detail, of a later date, notwithstanding that it has been done with far more command of exact facts.

The value to us moderns of Greek thought is that the Greek thinkers recognised that no view was sufficient which excluded any important degree in which reality and the truth about it could be presented. Goethe says somewhere that the test of poetry is size. We may to-day say the same thing about philosophy.

Where Hellenistic reflection remained least complete was not in any matter of detail or upon its theoretical side. It failed to hold control of the human mind because it was ethically inadequate in the scope of its outlook. It did not take sufficient account of the infinite value belonging to human personality, humble as well as great. That was where it laid itself open to the criticism of Christianity, a criticism which subsequent reflection by degrees assimilated and found justified. It was not that Hellenism had wholly failed to be conscious of its own defects. Socrates and Plato were aware of what had to be added for its completion. But neither they nor those who followed them were in deep enough earnest over the fundamental problem of ethics. They wavered over it, and they gave place to those who did not waver.

In his novel *The Death of the Gods*, Meresjowski tells the story of the Emperor Julian. He loved Hellenism in all its forms. But the efforts of Julian could not bring back the gods of Greece to life. "You are sick," cried to him Arsinoe in the story, "you are all too weak for your wisdom. That is your penalty, Hellenists of too late a day. You have strength neither for good nor for evil. You are neither day nor night, nor life nor death. Your heart wavers, here and there. You have left one bank, and cannot reach the other. You believe, and you do not believe. You betray yourselves, you hesitate; you will and you do not will, because you do not know on what to set your will. They alone are strong who, seeing one truth, are blind to all other. They will conquer us—us who are wise and weak."

CHAPTER XII

NEW REALISM

One of the most interesting departures in speculation during recent years, a departure in its own way as striking by its influence as that of M. Bergson, has been the movement initiated by the various schools of New Realists. Since the commencement of the twentieth century the disciples of these schools have been engaged, both here and in the United States, in inquiries of a far-reaching nature. Turning away from the methods of their predecessors, and particularly from those of the idealists, they have sought to bring philosophy into close relation with science, by endeavouring to adopt the modes of investigation which have been evolved by the latter. They claim to have thus placed philosophical inquiry on a sound basis.

Of these New Realists there are, as I have indicated, several schools, diverging from each other rather in results than in methods or tendencies. For all of them have this in common, that they give to the non-mental world the status of being self-subsistent and completely independent of the mind of the observer. Actual objects do not for them exist in the mind, but in a medium that is independent of mind. Its characteristic feature is apparently taken to be that of self-subsistent space and time, or of their union in a foundational space-time continuum. For space and time may prove in the end to be only two inseparable forms of a general and self-subsisting externality. Some New Realists go so far as to call space-time the final substance of the phenomena of experience. But the important point on which all the New Realists appear to be at one is in holding that things exist as they seem, and that to interpret them as not existing apart from our consciousness of them is absurd. Even mere appearances,

if it be legitimate to use the word, are non-mental. As for minds, according to one school of New Realism, if they disappeared from the universe there would have disappeared only passive awareness, or possibly a system of "conations," independent of which our sensations themselves subsist as objects in a non-mental surrounding. According to another school, that of certain prominent American metaphysicians, the physiological organism is the only reliable fact, and even the relation of awareness or conation is nothing with a character apart from that of its objects, but appears in consciousness only as distinguished or grouped in a special fashion by the nervous system, in contrast with other objects. For this school and for those Behaviourists who are associated with it, the grouping, but only the grouping, either depends on the nervous system, or else is simply to be accepted as a fact included in the universe like any other fact. The supposed evidence of introspection in support of a peculiar mental activity is denied altogether. Seeing means simply colours occurring; hearing means sounds occurring; thinking means thoughts occurring. Mind is just a casual selection out of the objects included in the field of consciousness, and has no characteristic that distinguishes its nature from that of the other objects in the field. The word consciousness is a merely demonstrative appellation. For the former school there is thus an approach to dualism, between what may be called in a carefully limited sense subject-objects and mere objects. For the latter school mind is nothing distinguishable from any of its objects; it is simply a set of objects of a special class. Even when we are in error there is an object, and there is no justification for regarding the erroneously conceived appearance as the creation of a mind more than in the case of any other object.

Thus objects alone really exist, and what we call consciousness is, at the most, a name for certain segments or groups of these objects. Knowledge is indeed often dependent on contiguity and succession. Such relations may be characteristic of the groups in which they consist. But to say this is to say something not free from ambiguity. It does not really imply that such mental relations enter into the nature of the object. What is real may be non-material, inasmuch as it may stand in non-material rela-

tions, but this does not import that it is therefore mental. The object is always different from its apprehension. We may classify it as material or non-material, as fact or as fiction, as concrete or as abstract, as true appearance or as untrue. All of these relationships as such may be objects, and in so far as they are they exist independently of our apprehension of them. Thus universals and relations which we can only describe in terms of universals are part of the non-mental reality.

This doctrine is of course remote from that of ordinary materialism. It does not deny the reality of the relations or universals to which our knowledge guides us, and which have been hitherto assigned to its domain for the explanation of their genesis. It gives these relations and universals, on the contrary, a high place in actuality. For it declares that they belong to the substance of the non-mental world and are independent facts in it.

As is to be expected from the method adopted, what is in truth the conception of *substance* is really implied as the everywhere dominant category in such teaching. It is disguised under the general name of entity, when it is applied to what is of a more than merely sensational nature, such as are the relations in which sensations are ordered and connected. But even these relations are looked on as self-subsisting, as static and self-contained realities, and to them the conception of substance, which is applied to other aspects of the phenomena of experience, is virtually extended likewise.

I shall refer in the pages which follow to what seems to me to be the real significance of the recent movement in philosophy of which I am writing. The outcome of the new doctrine appears to be that, contrary to what the idealists teach, the world of our experience owes to mind little or even nothing of its constitution. The novelty in point of form of this latest departure in philosophy lies in its inclusion of relations of the type of universals, which were before considered to be products of thought, in an object-world which is pronounced to be strictly non-mental. In so including universals the new movement brings us back to what bears some analogy to the doctrine which Plato taught more than two thousand years ago. But New Realism makes its point much more definitely than Platonism did. It claims to have laid its finger on a

cardinal fallacy in epistemology, the doctrine according to which knowledge is the property of a mind, and yet actually creative. It asserts strenuously that the mental act of perceiving contributes nothing to the actual existence of the object perceived. What we feel or even know is, for the new school, not only real and independent, but complete in itself apart from the work of the mind in apprehending it. The object of thought, according to the most thoroughgoing exponents of this realism, is in its nature independent of any act of thinking, just as much as what is felt is independent of feeling. The justification of this is put forward in the shape of a systematic reconsideration of the character of experience. Such a reconsideration shows, it is claimed by some prominent New Realists, that there is between the act of perception and the reality that is perceived nothing intermediate or purely mental, nor anything that is legitimately to be regarded as an idea or presentation. It was through a mistake under this head, a confusion of the act of perception with the idea perceived, that Berkeley thought he had arrived at subjective idealism, and that Hume developed Berkeley's result into scepticism. It was the merit of Reid, though he did not know how to push his discovery, to have found out where these two went astray.

By the New Realists generally the pretensions set up for knowledge by the idealists are reduced to very modest dimensions. Consciousness itself is held by none of them to amount to more than an activity or conation of a special kind, capable of nothing beyond passive reception, and itself developed by the nervous centres of the brain. Such activity does not add to the reality which confronts it, a reality which it presupposes and with which it is compresent in space and time. Indeed, the fundamental relations in the universe are really relations of compresence in space and time, relations which belong to the conscious and the unconscious alike. The mind which contemplates the fire is compresent with it in these foundational modes of reality in exactly the same fashion as is the armchair in which the organism is sitting. The nature of the mind which perceives both the fire and the chair is that of awareness, an activity, as is subsequently discovered, of a brain, but an activity that is not constructive but only receptive. It is a process, operating as a factor

in a self-subsisting world of space and time, of apprehending by way of sense or by way of thought. It is a process that is moreover aware of or, as is said by Professor Alexander and his followers, " enjoys " itself. Into the constitution of the existence of what it apprehends it does not enter at all. It is simply receptive of its object, and coexists with it in the experienced world, the relationships of which are thus more fundamental than are those of knowledge. Indeed, knowledge is something merely superinduced on the compresence of the brain with the fire. That compresence is foundational, and belongs to the chair in the same way as to my brain, although in the case of the chair awareness, in which consciousness consists, has not been superinduced.

All of the New Realists might not choose these expressions. But some have used them, and I think that they fairly describe what lies at the foundation of the general doctrine. Later on I shall touch on other aspects of this realism of the twentieth century. But even a bare outline of its fundamental doctrine shows its main point of application. Idealism had ousted the old materialistic realism, and, by analysing the existence of the object-world into perception or thought, had reduced matter to mind. Modern Realism rejects the analysis and the monistic view of reality which it entails, and affirms that reality is through and through extra-mental, and, as extra-mental, fragmentary or at least pluralistic. Even percepts and the objects of thought, which have been in the past permitted to pass muster as belonging to the territory of the mental, are now affirmed to lie outside it, and to exist independently of each other and of the activity of the intelligence that apprehends them. A formidable barrier is thus erected across what Berkeley and Hume took to be an open highway to subjective idealism.

This is an impressive position, but its far-reaching character is not its only notable feature. It is supported, as no philosophical system has before been supported, with a claim to evidences drawn from mathematics and physical science. A large body of investigators, here and in the United States, are busily engaged in devising new applications of its principle and method, applications which are based on mathematical and scientific attainments in some cases of a very high order. The philo-

sophical magazines, as well as the philosophical books which pour out of the Press, testify to the volume and vitality of the work that is being built up in support of the new doctrine. Its students are already in occupation of an extensive field in current philosophy, and they are pursuing their subject in the regions of exact and detailed knowledge with an energy that has had but few parallels in the history of thought.

The appeal made is a good illustration of the method by which genuine progress takes place in the pursuit of metaphysical truth. First great schools, such as those of the Platonists and Aristotelians, monopolise the attention of the world and seem to have established a claim to finality of principle. But by degrees there rises up a reaction against them, such as that of the days of Francis Bacon, and they appear to have been permanently deserted. This, however, proves in the end not to have happened. For new forms of idealism, founded largely on the results originally accomplished by Greek thought, but having absorbed the apparently negative contribution to such knowledge of modern science, presently occupy the field. They claim men's attention afresh, and for a time seem to have displaced all else in the estimation of those who know. But when the generation of master minds who have been adapting afresh what is old in the new forms begins to pass away, these forms in their turn begin to seem abstract in method and stale in outcome. There then sets in a process of transformation, apparently radical, from a new outlook, based mainly on the possession of fresh and more exact knowledge about the constitution of reality in its various forms, an outlook which in its turn seems always destined to be altered from a standpoint apparently fundamentally different.

But the differences are never, so far as the history of thought in the past is a guide, so fundamental as they appear to the generation in which they first emerge. Progress takes place by oscillation succeeding oscillation and reaction following on reaction. Every great controversy seems as if predestined to end in a larger and more complete outlook, in which the best that has gone before is taken up and preserved, and there is no reason to think that the new and great controversy which modern realism has raised will not work out analogously. Nothing but good,

in the form of an enlarged view of some of the characteristics of reality, is likely to emerge as its result.

For every new system of thought that is worth anything brings with it fresh and deepened conceptions under which to interpret the universe. Plato and Aristotle accomplished results of this sort. The modern idealists did the same thing in a fresh fashion, and the New Realists are apparently working with a similar purpose to-day, when they interpret the objective world as containing universals, thought about, no doubt, but nevertheless as real as the particular experience given to knowledge by acquaintance through sense. The reconceived universals may or may not have for sense a separate existence apart from the particulars which they hold in their framework. They may prove to have the character of either external or of internal relations. But they reveal themselves in our experience of these particulars as there present and confronting us, and not merely as added by reflection *ab extra*. It is for these relations and the laws to be deduced from them that science searches, and they guide and mould all the searchings of science. In this way in a new philosophy conceptions selected from the non-mental environment will determine the subject-matter for reflection, which always finds features only of the character for which it has adapted itself to seek. We see this in the case of the new school, which conceives the object of consciousness as a real world confronted by another thing which stands passively receptive towards it. We see the same influence in the instance of Bergson, when he finds himself guided by observation to the existence of an ultimate and creative activity of life as directly disclosed by our consciousness. We see a similar moulding influence exhibiting itself in varying forms in the systems of the subjective idealists, such as Berkeley and Hume, and in the later and different systems of the German idealists and their followers. But we are apt to place the oppositions between the conceptions of the various schools too high, to regard them as though they were absolute instead of merely relative, and to fail to see how each turns out to be just in the end a correction of what has gone before by the incorporation of a negative, a correction which is itself destined to be similarly qualified and supplemented later on. The more fundamental and

far-reaching of the conceptions which dominate tendencies in this fashion we call, in technical language, categories, and we come, if we read the history of philosophy aright, to regard it as a history of the criticism of categories.

Now the moulding power of categories does, as we have seen, no doubt alter for us in a remarkable manner our view of the character of truth and reality. It even appears, since we never can be certain of finality in the forms of our categories, to snatch from us all hope of finality in our attitude towards the Universe. Ought this to discourage us? The recognition of it does not discourage us when we meet it elsewhere. In literature, in art, and in music, where the representation, however much drawn from nature, is valuable only in so far as it is born again of the mind of him who creates it, there is no such finality. Truth and reality are there considered to lie in what is finest and highest in the quality which a generation has produced. The truth never stands still. It is always changing its form as our categories change. Relativity thus acquires a new meaning for us.

What is fundamental and essential is the development of fresh results of utility in application. For the sake of this progress must always be taking place in the correction and evolution of our conceptions. To the searching criticism of these conceptions, whether in theoretical or in practical life, there is no finality. It seems that, as was in the end discovered by Faust:

> "He alone gains and keeps his life and freedom
> Who daily has to conquer them anew."

Now this will not discourage us if we have the insight to perceive that supposed finality must be actual falsehood, whether we are dealing with daily affairs, or with literature and art, or with philosophy or with science. It is not faith in final truth so called, because for us human beings there is no such thing as absolute and final truth, but the quality of strenuousness and progress in the search after it that alone can give us a sense of finality attained in which we can rest.

The influence on all our knowledge of categories as conceived in our period is accordingly a factor of the last importance, and it is to categories and their criticism that we must see closely if we would be certain of the only kind of progress towards what is real that it is worth trying to

make. But our categories do not merely limit our outlook. Affirmatively they impart to it new definiteness and penetration. By means of them we concentrate and direct mental effort. They guide us in the reflective search for truth, and, as far as their light can reach, show us new paths along which to pursue it. The New Realism, to take it as an illustration, is stimulating the study of logic and mathematics. Whether the work done may hereafter be found to have been partial and unduly abstract is not the question. The point is the advance towards methods by which problems hitherto insoluble seem to become capable of solution.

In his recent Gifford Lectures, so far as they are concerned with space and time and with the bearing on their interpretation of the principles of New Realism, Professor Alexander, in two closely reasoned volumes, has shown how philosophy may seek to establish organic relations with mathematical and physical science. The Lectures contain a notable attempt to accomplish this, and are characterised both by fairness towards those who differ from him and by great general knowledge. He discusses in particular the mutual implications of what we separate in reflection as space from time, and he tracks back the common root of their apparent features to the space-time continuum of the school of Einstein. Into the details of his reasoning I have not room to enter. But I may observe that he regards the continuum as analogous in its character to that of motion, and sees in it a foundation for the reality, not only of space and time and the relations in them, but even of those categories which others, like Kant, have treated as forms of mind itself. Whether, therefore, the continuum comes first for science, or knowledge itself must come first, it is necessary to ask at the outset. For it seems to me that the argument of Professor Alexander, by reason of his loyalty to his own principle, has been somewhat deflected from the results which are all that the new mathematico-physicists have really produced.

He shows that space, taken in abstraction from time, could have no distinction of parts, while time, taken in abstraction from space, would yield a mere " now." Apart from space there would be no connection in time, mathematically considered. A real continuum therefore implies

both factors, for without a temporal element there would be no separate points to connect. There is no instant of time apart from a position in space, and no point of space except in an instant of time. The point occurs at an instant, and the instant occupies a point. This is not very different from the Bergsonian analysis of mathematical time. The ultimate stuff of the Universe for Professor Alexander must therefore, accepting as he does the principle of relativity in observation, be of the character of point-instants, and it is so that we get at the continuum. The correspondence which characterises it is, not a one-to-one, but a many-to-one, correspondence. For one point may occur at more than one instant, and one instant may, analogously, occupy several points. He thinks that in this conclusion he is in full accord with Minkowski's conception of an absolute world of four dimensions, of which ordinary geometry omits the fourth, the temporal element. According to the general principle of relativity, as Einstein has since expressed it, we here reach a geodesic line to which is relative any possible form of motion and acceleration in a gravitational field. The form of the differential equation describing its track must therefore be such as to be applicable whatever may turn out to be the character of the co-ordinates of reference of the observer of motion in any conceivable gravitational field. But surely this result imports nothing short of relativity, not of what is of a non-mental character, but of what is so for intelligence. Let us try to see whether this can be otherwise.

I begin by observing that there seems to be no reason to differ from those who insist on the reality of the continuum. The question is what this reality means. The continuum may be taken to be actually there, just in the same sense as are electrons. We cannot directly perceive either one or the other. Conceivably a being with more highly developed organs of sense might. But *we* cannot, and yet we say that we know the continuum and the electrons to be existent. What do we mean by this? Surely that we interpret the phenomena of ordinary space and time as importing reality only relatively, that is as construed from a standpoint which might be quite different, to an extent that is unlimited, from what it is. The construction from that standpoint is relative to the

particular standpoint. So far as it is applied to what we are here concerned with, forms in extension and their measurement, it is a purely relative one. It depends on the concepts which fashion the belief that gives rise to the standpoint, the belief, for example, that I, the observer, have axes of reference of a particular kind, and am at rest or in motion as the case may be. Under the influence of this belief I, the observer, relying on co-ordinates of reference which may vary infinitely, not only interpret but experience accordingly lines, measured by reference to my conditions, as straight or curved, distances as greater or smaller, and time as correspondingly measured. I grasp that all this has come to me from interpretation of the actual, and not through direct and immediate knowledge of it. I go on to ask, still by searching, not for perceptions, but for systematically drawn inferences, to what I am to ascribe meaning as belonging to the actual, in the sense of not being either appearance or notion relative only to some particular standpoint. I am searching for what I can legitimately conceive as true, not from one standpoint only, but from any standpoint, an existence that can in consequence have its meaning only through universals. In the case of the continuum the universals prove to be, not static entities of a non-mental aspect, but variables, true universals of mind which are never inert and are always in process in virtue of their inherent nature of developing new relations. That seems to be the necessary result of being in earnest with Einstein's principle of the equivalence of inertial and gravitational relations.

In order to see that this is so, one has only to turn to Einstein's own homely illustrations. I will take one of these, only slightly adapting its descriptions to British habits of expression. A man is travelling in a train going fifty miles an hour. Having finished the contents of a bottle of smooth exterior, such as the wind cannot catch, say a ginger-beer bottle, he opens the window, and, to satisfy his curiosity, drops it on to the line. He observes, when he stretches out his head, that the bottle falls in what for him is a straight line perpendicular to the ground, under the influence of gravitation. As the other interfering force, inertial motion, is common to the bottle and to himself in the train, he has not to take account of it. The

permanent way seems to be running from under the train in the other direction, and the bottle seems to fall out in a nearly perfectly straight line.

But to an indignant plate-layer, who has just escaped its impact, and who happened to be standing at the side of the permanent way, the bottle appears not to have dropped in a straight line at all, but to have flown by him in a parabolic curve. The reason of the difference is that the plate-layer applied different co-ordinates of reference, interpreting himself as at rest on the embankment, while, according to the system of reference of the passenger in the train, he and the train looked at rest and the embankment in motion. On the earth, by which both systems were contained, there were therefore two systems, one relatively at rest and the other relatively to it in rectilinear motion, which could be rendered into each other's terms by applying the formula devised for the Lorenz-Fitzgerald contraction hypothesis. What the formula does, unlike the old Newtonian formula for adjustment on the footing that the permanent way and the plate-layer were at rest in an absolute space and time, is to provide for the variation and consequent relativity of the co-ordinates used in each case for expressing the space and time factors in the equations, and for rendering them, while of different mathematical values, equivalent for purposes of mathematical calculation.[1]

But an infinity of such variations in these factors is possible, if we take into account other conceivable standpoints of observers. To a man in the sun there would be one, to a man in Saturn another, to a man in a very distant fixed star a third, and so on, *ad infinitum*. What Einstein has done, by applying the general principle of equivalence, is to get rid of the idea of space and time as independent of the observer, and to provide a method which will apply to *all or any* of the forms and measurements which for him depend on these standpoints. He treats the relations in the continuum alone as determining an absolute system of reference.

[1] It makes no difference to the truth of the principle that its application has to be limited by those exigencies of society, which compel us on the earth to regulate our practice by conventional co-ordinates. A police magistrate would therefore deal summarily with a defence by the passenger based on Einstein's general doctrine. The context of social experiences requires its exclusion from everyday affairs.

Now it is only conceptually and by reference to the observer that he can do this. It is only mediately and by inference, for there is no direct awareness of any such continuum or of such relations of measurement. They are only meanings which Einstein discovers in nature by his mathematical methods, and they are surely analogous to what is mental in character, and to nothing which passive awareness can furnish. Their very intrinsic variability shows this. They presuppose knowledge for their reality, and it is not knowledge that presupposes them. It is only the forced hypothesis that knowledge is a causal relation between two independently existing things that gives any plausibility to a different idea. Such an idea cannot even be put into language unless such a causal hypostatisation is first made. Is, then, the foundational fact that we know in truth of a conceptual character? We have already given reasons for answering that question in the affirmative.

As has already repeatedly been said, the affirmation does not mean that thought creates things. To conclude that it means anything of the sort is again to assume tacitly that mind is a thing that acts causally and the world a different thing of a non-mental nature. Now Einstein's doctrine is an illustration of the falsity of the assumption. What he is concerned with is a series of meanings which possess reality and veracity only relatively to knowledge. If the principle of relativity is well-founded the very basis of New Realism seems to disappear into vapour. None the less the strictest mathematical-physical methods remain wholly justifiable for anyone who carefully guards himself against implications that take him beyond the limits of physical science; as Professor Whitehead, for example, guards himself. For all he looks for is the meaning of reality from the point of view of science as strictly confined to its own domain. To the window theory of the mind he is not tied. For him the actual is not put into the dilemma of either coming in or going out through windows.

I cannot therefore but feel that Professor Alexander, despite his admirable maxim of 'thorough,' makes too great a demand on our credulity.

Another brilliant exponent of the doctrine of the New Realist school in philosophy is Mr. Bertrand Russell, whose

reputation as a thinker, and particularly as a mathematician, is more than European. He claims that on the basis of its ability to treat the self-contained character of the world as non-mental and as including universals, he is able to put the connection of logic with mathematics on a new footing. If relations are not merely the products of thought, but confront us in the world of experience as existent there not less truly and independently of ourselves than the particulars of sense, then the work of logic must be to investigate these relations. Because they are extra-mental entities, notwithstanding their quality of being universals, we can rely on their validity when, by thought and experiment directed by thought, we have discovered them, and they may therefore legitimately guide us in forecasting the behaviour of the particulars of the experience in which they are embodied. Thus the problem of how deductive reasoning can give us more in its conclusions than was contained in its premises appears in a new light. It was a problem which was insoluble only if we assumed that general principles could amount to no more than inductions by enumeration from the whole of the particulars. The question of course arises whether the result reached by Mr. Russell is a monopoly of New Realism, and whether it has not been already attained from a different point of view. But what is interesting is that the outlook of Mr. Russell and of others who share his metaphysical views has directed them to this solution. In the hands of a master of mathematical method like Mr. Russell himself it has proved very fruitful. For it has enabled him to treat mathematics as a branch of his new theory of logic. In this way he extends its range in a fashion in which it was difficult to extend that range while mathematics was confined for its subject-matter to forms in space and time, even when got by construction, and had no proper access to concepts. For if there is a body of relations in the world of objectivity in space and time which, although universals, are entities existing as independently of our reflection as do the relations in space and time which we find in the world as perceived by the senses, there is no inherent reason why we should exclude the former from the subject-matter of mathematical method. Indeed, by including them in this subject-matter it is claimed that much advance can be made.

Logical forms, according to the view to which I am referring, and indeed according to other views, comprise more than is contained in the mere two-term relations of subject and predicate in the judgment of formal logic. They are the foundation of general truths and also determine the structure of the general propositions which express these truths. They are even more significant for the modern synoptic logic, which dismisses the ordinary major premise as a useless figment, than they are for the older syllogistic logic. The business of mathematics is with certain classes of such general truths, and its object is, like the object of every kind of science, to rationalise the confused and indistinct perceptions of experience by discovering and disentangling the implications they contain and the relations which govern them, implications and relations which, though universals, may be actual entities just as truly as the percepts themselves. The science of mathematics is the branch of logical science which deals not only with certain of the relations which are characteristic of space and time but with the concepts under which they fall, and which guides us in, among other things, making ideal constructions in space and time symbolical of these concepts. The method of mathematics is largely deductive, for, when a concept of universal application, being a real entity in Plato's sense, has been discovered, we can frame propositions based on it which are true of all the particulars which experience teaches us that it governs, in so far as they are seen to illustrate, and so belong to the class ascertained by the concept. Thus these propositions may be held genuinely to extend knowledge when we apply them.

It is worth while even for a layman to pause at this point, and to try to appreciate an illustration afforded by the treatment of mathematical truth from the standpoint of the New Realism.

The definition of number has for long been a puzzle to mathematicians. To limit the application of number to what can be counted is to exclude all that cannot be counted, such as are transfinite numbers. It might therefore seem natural that New Realists should have sought to treat the word number as descriptive of an actual but non-sensible entity. Mr. Russell, however, does not take this course. He thinks that while number

is properly predicable, not of physical things, but of classes to which they belong, it does not directly represent an actual entity. What it signifies is a class, but a class of which the meaning is the possession by its members of a defining property in virtue of which they belong to it. Number is not, for Mr. Russell, the outcome of the consciousness of repetition in our activity in counting. It is on the contrary a title by which we describe the class to which collections of things belong in common when their members stand in such a relation that each member in one collection has, corresponding to it, a member in another collection. It is the possession of this property that makes the two collections similar in class and capable of description as the same in number. Number thus refers, not to objects, but to the possession by a collection of a property which relates it to other collections in such a way that they may be regarded as belonging to a common class, the class which the number, which may or may not be capable of being ascertained by enumeration, describes. In this sense a unity is asserted. When we say of an infantry battalion that the number of its rifles is one thousand, and is the same as the number of the privates who serve in it, we mean that for each man in one collection there exists a rifle in the other collection, and that the two collections, which are similar by this one-to-one correspondence of their members, belong to the class which has the title of one thousand. It is the relation of the collections and their one-to-one correspondence which the number indicates. Even if we cannot ascertain an arithmetical number of the members it contains, the class may be defined algebraically as x, and we can reason about x as the indication of a class to which all collections or classes that are similar to it belong. The number 2, on the other hand, to take an ordinary arithmetical example, is the class of all couples, and 3 is the class of all triads. It may be hastily exclaimed that this, while true, is artificial and abstract, and is no sufficient reason for rejecting the usual way of regarding numbers as properties of things as distinguished from classes and from general descriptions or characteristics which bring the subjects possessing them into membership of classes. But the answer given is that it is the very abstraction which the method makes that enables it to disengage the conception

of number from the limitations within which its application is confined when that application is made dependent on the presence of specific objects which can be counted in virtue of being before us. In what are called infinite collections the members of the class are not all before us, and never can be. Yet, although a series is unending, we may know that every member in it has a corresponding member in another infinite series, and *vice versa*. In such a case we can find an algebraic description, applicable not only to "each," but to "any," which will define the entirety of the series. The new definition can in point of fact be applied to infinite numbers and collections as easily as to those that are finite. For this method it is also claimed that it delivers us from apparent antinomies which are inevitable with ordinary procedure. The old method to which arithmetic is limited because of its definitions lands it in insoluble problems and also at times in contradictions. It cannot deal with transfinite numbers. It has, again, no use for such a conception as $\sqrt{2}$, and still less for that of $\sqrt{-2}$. And yet in other branches of mathematical science these are of great value. It has been deflected by the limitations of its concepts, and if the reasoning of the most modern mathematicians has accomplished nothing else it has at least subjected these concepts to a salutary criticism.

It has been said that if a mathematician of the days of ancient Greece were to come to life again to-day, he would be astonished at what would seem to him a miracle, the fact that even the children in the modern world do sums with easy facility in multiplication and division, which would have been beyond the arithmetical faculty of the greatest mathematician of antiquity. The explanation is of course the possession of the Arabic notation and of the number 0, possessions which have enormously enlarged our arithmetical capacity. Now it may well be that, just as this advance in ideas expanded our mathematical scope in a large class of operations, so the new notions which have been introduced by logical methods, based on the assumption of the reality of intelligible relations, may greatly extend the possibilities of mathematical operations. People were held back in the first case by the paucity and narrowness of current conceptions, and it may be that the world will prove to have been similarly

held back in our own time. Mr. Russell says that he required the metaphysics of the New Realism for his emancipation. Whether this particular metaphysic was really essential for his mathematical developments may be open to question. But the doctrine is at least highly suggestive, and it is a result as valuable as it is rare when a man of science has sought to present his system as a connected whole of thought.

Having made this reference to Mr. Russell's mathematical logic, and to its value in his hands, I must none the less say something more. In one of his latest books, his *Introduction to Mathematical Philosophy*, published in 1919, he explains his view of the broad principles that underlie an earlier and much more detailed treatise, the *Principia Mathematica*. In the subsequent book he extends his basic principle freely to every sort of process of thought. Among the most important of the chapters in the new volume are the fourteenth, which deals with Incompatibility and the Theory of Deduction, and the fifteenth, which is devoted to what he calls Propositional Functions. These last are expressions containing one or more undetermined constituents, such that, when definite values are assigned to them, they become propositions. Such a function is therefore itself one whose values are themselves propositions. The assertion in its case is not that the principle invoked applies to a particular instance, but that it is true in all or any of such instances if it can be asserted of them significantly. A common property is the subject of a propositional function, which means what becomes a true proposition only when some one of its objects is taken as the value of the variable. "If A is human, A is mortal" may be valid as a statement, whether A is human or not, but it is a statement of a functional and not a propositional nature.

With the aid of this method Mr. Russell proceeds to lay bare certain fallacies, largely, but by no means all, mathematical. He attributes these to neglect of the above distinction. The method is doubtless a really useful one for certain purposes, useful in the same way as is that of the psychologist in disentangling, for definite if limited purposes, and arranging in a scheme of practical value, the phenomena of consciousness, or rather certain of their aspects. But I think that, just as in the case of the

psychologist there are always latent certain distortions, so in Mr. Russell's thesis there is implied a claim to insist that thought must assume a form which may well be one of its forms, but is not less clearly only one out of an infinite variety. Reflection may be forced into such a form in order to bring it to the test. But it is thereby mangled.

Mr. Russell says that he means by a proposition primarily a form of words which expresses what is true or false. "I say 'primarily,' because I do not wish to exclude other than verbal symbols, or even mere thoughts if they have a symbolic character. But I think the word 'proposition' should be limited to what may, in some sense, be called 'symbols,' and further to such symbols as give expression to truth and falsehood." [1]

Here we seem to find the root of the matter. In mathematical reasoning there is, because of the character of the symbols with which its processes are concerned, obvious justification for Mr. Russell's demand, and it is applicable, if in a form less stringent, from certain other standpoints. Mr. Russell refers us to the *Principia Mathematica* for a list of his formal principles in deduction. These are such as are illustrated in processes of mathematical reasoning. But when, as he apparently does, he goes on in the recent book to suggest that the account given is adequate for inference of every type, questions at once arise. In literature, in art, in religion, do we reason in ways like this? Is the description of the processes of thought given in the chapters referred to one that can apply to thought in all its forms? Can what is dynamically foundational to every possible form be thus put into a strait-waistcoat and rendered static? The claim seems from my outlook to be much too narrowly conceived. I am well aware that the conclusions embodied in these pages are such that I cannot have the hope of securing the concurrence in them of Mr. Russell. But as a plain person, who takes thought just as he seems to himself to find it, and prefers to let it pursue what seems to be its natural life, rather than to kill and dissect it, I must here part company even with one for whose originality and acuteness I have so deep a respect as I entertain in the case of Mr. Russell.[2]

[1] *Introduction to Mathematical Philosophy*, p. 154.

[2] As an illustration of a sort of human reflection in the pursuit of truth, at the other extreme from the sort which Mr. Russell seems to suggest

If the suggestions of the New Realism have taken root in the soil of pure mathematics, there is another department of science where they ought to be at least as fertile. The science of biology appears to have suffered more than any other from limitation in categories. The majority of those who follow it still think that all the apparent relations belonging to organic life, beyond such as can be expressed in terms belonging to physics and chemistry, exist only in the mind of the observer and have no real counterpart in the objective world. When driven to concede that the growth of a cell cannot be regarded by the observer as analogous to that even of a crystal, some of them have betaken themselves to the idea of a special sort of energy of which the causal action explains the phenomena under observation. Sometimes they call what they thus invoke vital force, and sometimes, not very accurately, an entelechy, still intending by the latter term to describe what in reality exists outside the material in which it realises itself, and is thus a form of causal action. More often, however, biologists have simply ignored the crucial question of what conceptions they ought to use, and have contented themselves by affirming

as the true type for our thinking, I transcribe the passage which follows from a recent book by a great American critic in other regions, Mr. Justice Wendell Holmes's *Collected Legal Papers* (at p. 180, where he is dealing with the " Path of the Law "). The author is writing about the method of reasoning requisite when the aim is to attain to truth in the administration of justice. " I once heard a very eminent judge say that he never let a decision go until he was absolutely sure that it was right. So judicial dissent often is blamed, as if it meant simply that one side or the other were not doing their sums right, and that, if they would take more trouble, agreement inevitably would come. This mode of thinking is entirely natural. The training of lawyers is a training in logic. The processes of analogy, discrimination, and deduction are those in which they are most at home. The language of judicial decision is mainly the language of logic. And the logical method and form flatter that longing for certainty and for repose which is in every human mind. But certainty generally is illusion, and repose is not the destiny of man. Behind the logical form lies a judgment as to the relative worth and importance of competing legislative grounds, often an inarticulate and unconscious judgment, it is true, and yet the very root and nerve of the whole proceeding. You can give any conclusion a logical form. You always can imply a condition in a contract. But why do you imply it ? It is because of some belief as to the practice of the community or a class, or because of some opinion as to policy, or, in short, because of some attitude of yours upon a matter not capable of exact quantitative measurement, and therefore not capable of founding exact logical conclusions. Such matters really are battle-grounds where the means do not exist for determinations that shall be good for all time, and where the decision can do no more than embody the preference of a given body in a given time and place."

that the methods of physics and chemistry are the only methods which are permissible in exact science. The consequence of such attitudes in biological research is that its directions are profoundly influenced. There are, of course, mechanical and chemical processes which have to be studied in the action of the blood corpuscles or the kidneys. But these ought not to be assumed to be the only phenomena which concern the biologist, or even the most important of such phenomena. If we were studying the structure and activity of an army or a state, or if we were applying ourselves to the formulation of the ethical or juridical principles which govern the action of a community, we should study the facts which experience presents with the aid, not of the balance or the measuring rod or the clock, but of standards and methods and conceptions of quite a different order from those of physical science. We should recognise that the phenomena under investigation required ideas analogous to those we derive from the experience of self-consciousness and of intelligent purpose, for their comprehension. Now why is this readily admitted to be so in the study of human society while it is denied in the study of the human body? The answer is not far to seek. The conventions of many biologists do not allow them to use, except provisionally, such a conception as that of end, or of action which is quasi-purposive in that it consists in the realisation of an end. Use them provisionally they must, for facts which embody these conceptions stare them in the face. The course of life in the organism which conserves and maintains itself throughout the metabolism to which its material is subjected along the curve of the career from birth to the death that is necessary in the interest of the species; the organic development which results from the union of spermatozoa and ova, and the phenomena of heredity which this development exhibits; these things and the like require categories higher than those of mechanism to render them capable even of expression. Yet the older-fashioned biologists, while they are forced to use these categories, are equally forced by their metaphysical assumptions to deny them, except as only provisionally used and as in ultimate analysis untrue. For their philosophy implies that no relations in their object-world beyond those of physics and chemistry are real.

Their ambition has been to be delivered from metaphysics, and to remain with feet firmly planted on the rock of fact. But this rock becomes insecure for them because of an assumption which for all they know may be metaphysical, the assumption that the relation of end in activity, or of a whole existing only in the parts which belong to it and yet dominating their behaviour, cannot be a fact of extra-mental existence. Reality is by such would-be observers strictly confined to something very like the old supposed primary qualities, and they forget to open their day's work by a prayer to be delivered from the perils of a metaphysic as unconscious as it is out of date.

Now the New Realism is full of edification for this conventional school of biologists. Just as other universals are for it entities belonging to physical reality, so surely must be ends and the relation of an organic whole to its parts. The New Realists may well inform the physiologist that when he studies the exquisitely delicate and quasi-purposive operations by which the kidney keeps the blood in a normal condition, or by which the blood corpuscle itself regulates the amount of oxygen which it takes up in the lungs and of the carbonic acid which it gives off, or by which the living organism generally devotes its activity to the maintenance of normal conditions, his duty is to take reality as he finds it, and not to deflect and distort his observation of it by excluding the only conceptions of his facts that are warranted by what he observes. We are all of us confined in our study of the Universe by the limitations which the narrowness of our ideas imposes on our observation. Were I better equipped in this respect I should understand the world more fully when I walk abroad in it, an observation the application of which I do not restrict to my talk of scientific concepts. Yet I take comfort by observing that, notwithstanding a certain superiority in realisation of things around which the dog who accompanies me possesses in virtue of his sense of smell, an aeroplane and even a steam-engine mean nothing to him. Everything is relative here as elsewhere.

The New Realism, therefore, may accomplish much by delivering the modern physiologist from the terror of unknown metaphysics, and from the interference with his freedom to observe which the tendency to abjure all but certain aspects of reality has brought on him.

But here a doubt arises. If the New Realists can do so much, why do they not go further and do more? They seem at times to lack the courage of their convictions. If the categories of life are as much part of a non-mental world as are those of mechanism, why are not the categories of morals and beauty and religion also part of it? The hesitation which is sometimes shown in giving the answer to this question seems to arise from the circumstance that if it is so, then there is nothing left in the mental world at all, hardly even the activity which is conscious of enjoying itself. If the object-world is to swallow down the entire subject-world, then there is no longer any need for distinguishing between non-mental and mental, or between matter and mind. If the latter is absorbed into the former, then the former can have no separate existence. And it looks as though it were only by an abstraction that they have been separated in thought and distinguished. Separate entities they can hardly really be. If this be so, there is not only no need for New Realism but there is no room for it. If consistent with itself and resolute in pushing its reasoning to the inevitable conclusion, it may chance that it will find that it has decreed its own abolition. This is a point which must be noticed. A serious flaw in the armour of a system is found if it turns out that it proves too much. The question which arises is therefore how it has come about that the New Realists have professed to draw a boundary-line by which the region of the non-mental can be sharply divided from that of the mental. What comes again to memory here is that, as has already been pointed out, existence in space and time is for them foundational in the case of all that is real, be it matter or be it mind. For if consciousness is an activity at all it is a property of a thing, the nervous system, and is confronted in relations of extension and succession by another thing, the non-mental world, with its entities and existences, its universals and particulars. The dominating conception which has been applied to the mind is that of the thing and its properties, or, in other language, the category of substance. But is this category adequate? If it turns out to be inadequate quite other relations than those of extension and succession may have to be brought under consideration, if the facts are to be capable of being grasped. For it may turn out that, in

the relation from which we never get away in our experience, the object is not a thing confronting another thing, but arises solely by distinction made within knowledge which is really indivisible, and which appears as broken up only in virtue of acts of abstraction made by and within itself. If so, not only distinctions made in terms of space and time, but distinctions made between the non-mental and mental worlds, may prove to have been incorrectly interpreted, and they may disclose themselves as conceptions of abstraction made within and not without mind itself. In that case mind and not externality will be foundational for the Universe.

In order to ascertain more definitely the significance of the question thus raised it is essential to recall the philosophical ideas against which the New Realism was raised up in protest. For it seems as though the conflict were in reality one of counter-abstraction against abstraction, and that the attacking critics have taken a windmill to be a giant. What do we really mean by mind? If, when we use the word, we are thinking of a thing, or of a property of a thing, then the criticisms of the New Realists are difficult to answer. If we mean what is only a centre, finite in time and space, or a self that belongs to no order in reality higher than that of the organism in which it expresses itself, the New Realists have again much to say. The mind can on such a footing be no more than a succession of states of the consciousness of something observed, either by itself or from outside. The ego-centric predicament arises at once, the predicament in which the new school have sought to place subjective idealism. But if mind falls also within orders in reality of a higher character, and its foundation as finite has to be sought in a self-completing entirety such as was discussed earlier, then its nature cannot be exhaustively described in terms of the conceptions which the New Realists bring to bear on it. Mind can on that footing only assume for itself a finite aspect in so far as it is more than finite. The distinction between itself and the world that confronts it is one that thought itself has made. There is, as New Realism itself asserts, no gulf between the mental and the non-mental. They are phases in a whole within which they both fall, phases which are fragments only because of the standpoint of the observer.

What is the character of that whole? It seems to be such that within its terms and within itself all that in any way exists must fall. It is activity, but not the activity of anything apart from itself, or one which operates within forms of externality that have meaning only in its terms. To describe knowledge otherwise is surely to misconceive what is essential in its nature.

What, then, is the nature of mind? If New Realism is right, it is either a group of things or an attribute or property of things. Let us bring this theory to the test by looking at the nature of the non-mental world that is supposed to exclude mind and subsist apart from it. Its phenomena are not static but dynamic, and they are characterised throughout by their relativity. If we accept this far-reaching principle *ex animo*, do we realise how profound a difference it must, if it be a true one, make in the real character of the universe we observe around us? How are we to conceive the changes in that universe? They have to be recognised as varying with the mind of the observer. Reality itself can thus, at times at least, be accurately describable only in terms of differential equations, recording relative rates of change for the observer and in the reality observed. If that reality belongs to the mental, to thought as distinguished from non-mental entities, this occasions no difficulty. For the characteristic of thought is always to be continuously self-transforming. That is its dialectic, its negation of the relatively static character of what is taken to be external to it. And this means that what is apparently external to it never is really so. My interpretation of my world, and the meanings I attribute to it, are integral parts of that world as it seems and is for me. This is not wholly strange. If I were to enter Trinity College, Cambridge, in company with my dog I should know for certain that it was real for him in a very different fashion from its reality for me. For him it would be mainly a place of pleasing odours and of sensations which attracted him much. For me it has attractions quite other, with which many associations and a memorable past invest it as the home of the higher mathematics. For my dog, who can know nothing of these things, this aspect of what is for me more characteristic of its reality than the stone walls does not exist. And so for a disciple of Ptolemy, or even of

Newton, the starry heavens measured and placed in the only fashion which Einstein will allow us to recognise in them, as existing in modes relative to our observation, would be there hardly more than the real Trinity College, as it exists for man in its full significance, is for the dog. My thought as the individual who is writing this does not make things, but that is very different from saying that thought is alien to the constitution of the universe and does not, in the multitudinous phases in which we feel and know, enter into the very essence of the real universe.

Mind is no isolated thing; it is no attribute or property of a thing. It is the self-creating, self-contained, and self-comprehending activity within which falls and renders itself all that was, is, and will be. It is the self-developing interpretation and expansion of the meanings which are its own creatures, the meanings which make reality what it is, whether for limited purposes we distinguish it as what we call non-mental or not. It is never concerned only with a fragment, or confined to any singulars that are exclusive. That is because it is always in one aspect subject which takes in and goes beyond its object. Its range covers always the entirety of the universe, an entirety which, potentially or actually, in reflection if not in direct experience, is within that range. It is subject rather than substance, for substance is one only among the categories under which thought creates differences, while to call it subject is to point to what is distinctive in its characteristics. Even as conditioned by its mode of self-expression in the intelligent organism which marks off the finite self, that self is yet mind with this inherent character, and has as its essence the power to transcend limitations which have meaning and therefore reality for thought alone. The mind starts from the barest sense of the contact of the organism with another substance. It expands its sensations into a whole ordered by reflection in simple relations of externality. This whole it recognises as one which by its very nature cannot be confined within itself. Fresh feelings and fresh relations are thus recognised and established, relations, it may be, belonging to a higher order in reflection. Mind thus expands its world, and in expanding it knows that its action is not arbitrary, inasmuch as it is discovering its own nature and finding

itself in what appeared external to and independent of it, but really fell within an entirety which was no other than mind itself, which is thus meeting with its own activity and work in a system within which it has, to begin with, become aware of itself as an object belonging to the entirety thus revealed under finite conditions. That is how, as I conceive it, the individual in his aspect of finiteness is related to the self which at a higher degree of reality and knowledge is nothing short of mind in its full and infinite character; changed, again to use Browning's words:

"Not in kind, but in degree."

CHAPTER XIII

REALISM AND IDEALISM

In the last chapter I drew attention to the extent to which New Realism has allowed its views to be deflected by the notion of the thing and its property. This notion appeared as a narrow one, but of a potency which has given rise to a form of relativity, an antithesis to that of subjective idealism but based on the same idea of finality in order of knowledge. Into the story of the genesis of subjective idealism itself it is not necessary to go here in much detail. For it has been told often and excellently, and people are familiar with the unconscious assumptions made by John Locke, when he adopted the method of "looking into his own understanding and seeing how it wrought." The method is just one more illustration of how a metaphor may prove a real snare for a metaphysician. Locke sought to trace the genesis of intelligence, on the footing that he could safely represent it to himself as a property of a thinking thing. He went on to explain the beginnings of that intelligence in a way that assumed it to be already present in its completeness; an instrument that was really from the start taken to be at the disposition of the mind as already furnished with it. His very image of that mind, as fully equipped but enclosed in a human body and confronted by something wholly foreign of which it was to gain experience, in truth begged the question as to the genesis of experience that he set himself to solve. For it is only in terms of fully developed knowledge that his imagery has any meaning.

Locke was one of the first to try to treat knowledge systematically as though it could be regarded as an instrument, separable from knower and known alike, and capable of being laid on a table and pulled to pieces. He was, in other words, a pioneer in what is called in our

time epistemology. In him we find the " two-substance " theory in all its nakedness, with knowledge regarded apart and as a process taking place between the substances. How it can be possible to go behind knowledge, while taking it with us as the means by which we are to get behind it, is a question that does not occur to him. And yet the metaphysician who forgets it falls into sin against the light at the very outset of his pilgrimage. It is lawful to ignore this question only for the special purpose of being able to concentrate on a view of knowledge that is never meant to be more than relative. The mathematician and the physicist are typical users of the method of externalisation. But their object is not to get at the ultimate meaning of reality. It is an object of a much more limited kind, appropriate only to an outlook that is deliberately restricted. The view so attained can yield only results that are never more than relatively complete, and it depends on restricted conceptions adopted in order to obtain precision in only a special kind of inquiry.

If Berkeley destroyed certain of the superstitions of Locke when he discovered that it was wrong to speak of ideas as resembling non-ideal objects, his doctrine was none the less itself shortly afterwards forced by Hume down a slippery slope on which it was impossible to stop. Dissociating himself from his predecessor's view about ideas, Berkeley had still, in effect, applied the notion of substance to the mind and to God, both being required under this aspect for the application of his own principles. He treated experience as what could be broken into bits, existing apart from the significance which their mutual relations gave them, instead of as a whole which must be left in its integrity. Hume had in consequence an easy victory over him. There was no foothold on this slope. Spiritual substances and causation disappeared alike under the application of the analysis which Berkeley had himself applied to material substances. There was nothing left which could justify us, on this footing, in assuming that we could find more present than merely particular experiences or impressions along with expectations, scientifically unjustifiable, of their repetition, expectations which habit, derived from what we had chanced to find in the past, excited in us. What answer could be given to the question which must be put about every idea we had,

whether of substance or of cause or of expectation, "From what impression is the supposed idea derived? It is only an additional force and vivacity that distinguishes the ideas of the judgment from the fictions of the imagination." Belief is from this point of view a matter of purely subjective feeling, and not of rational insight, as Berkeley thought. "'Tis not solely in poetry and music," said Hume, "we must follow our taste and sentiments, but likewise in philosophy." When I am convinced of my principle, "'tis only an idea which strikes more strongly upon me. When I give the preference to one set of arguments above another I do nothing but decide from my feeling concerning the superiority of their influence. Objects have no discoverable connexion together; nor is it from any other principle than custom operating on the imagination that we can draw any inference from the appearance of one to the existence of the other." So with our "opinion of the continued existence of body," or our thinking that what appears as constantly repeated is the same as numerical identity, for we "disguise, as much as possible, the interruption, or rather remove it entirely, by supposing that these interrupted perceptions are connected by a real existence of which we are insensible." "It is thus, too, that we come to the hypothesis of the double existence of perception and objects; which pleases our reason, in allowing that our dependent perceptions are interrupted and different; and at the same time is agreeable to the imagination, in attributing a continued existence to something else, which we call objects. This is, however, but 'a new fiction'; only a palliative remedy which contains all the difficulties of the vulgar system, with some others that are peculiar to itself."

The story thus told in its bare outline shows how the notion of mind as a "thing" impelled Locke down a path on which he could not stop, and down which Berkeley was impelled by it still further. It was reserved for Hume to conduct philosophy yet nearer to the termination of this path in a precipice. The path selected by these three thinkers was that indicated by the signpost which prescribed the way as being to treat mind as substance, and Hume finally penetrated along this way until he came to a point where substance and mind with it disappeared

into the void. Then came on the scene Reid and Kant, the respective founders of two schools of philosophy in both of which it was insisted that the steps taken must be retraced and a return made at any rate some way back towards the starting-point. The first of these schools was that founded by Thomas Reid. He was a man well worthy of admiration, though he has been much forgotten. In certain points he anticipated what was to come more than a century later from the New Realists. Like them he entered at the beginning on the pathway which Locke had chosen, in the belief that it would lead, not to a precipice, but to reality. He, too, contemplated knowledge as an attribute or relation belonging to something which he called the mind. But he refused to go further, and to follow Locke in taking the immediate objects of the mind to be mere ideas. He saw that to do so could only lead to the disaster with which Hume had threatened philosophy. He, therefore, like the New Realists, rejected the doctrine which was to become that of representative perception. He thought that what was really perceived was, not an idea, but a fact, outside of and external to the mind that perceived it. He refused to concede to Locke and Berkeley the reality of either an intermediate or even a purely mental idea or presentation. Existence outside the mind was known directly, and such existence went on, whether or not there were windows in the mind through which we became aware of it.

Speaking of Hume, for whose insight he had a profound respect, he says this :

"For my own satisfaction I entered into a serious examination of the principles upon which this sceptical system is built ; and was not a little surprised to find that it leans with its whole weight upon an hypothesis which is ancient indeed, and hath been very generally received by philosophers, but of which I can find no solid proof. The hypothesis I mean is that nothing is perceived but what is in the mind that perceives it—that we do not really perceive things that are external, but only certain images and pictures of them imprinted upon the mind, which are called ' impressions ' and ' ideas,' . . . I thought it unreasonable, upon the authority of philosophers, to admit an hypothesis which, in my opinion, overturns all

philosophy, all religion and virtue, and all common sense, . . . and I resolved to enquire into this subject anew without regard to any hypothesis." [1]

When Reid speaks, as he goes on to do, of "common sense" as guiding him, he means, not the vague view of the man in the street, but what he calls "the first degree of reason," having for its object to judge of things self-evident. This he contrasts with "reasoning," or "the second degree of reason," which draws conclusions that are not self-evident judgments of this "common sense." It was under the guidance of such a principle that he sought to restore the reality of the object-world, and to rescue it from the pillage and plunder which it had suffered under the pens of the subjective idealists. In some very material respects he was a true pioneer of the New Realists.

Such was the distinctive tenet of the founder of the Scottish philosophy, a philosophy which was destined to go to pieces under the influence of Scottish professors who had learned something, but not enough, from Kant. To Kant himself it is now time again to refer, for he was the other thinker who, like Reid, so far as the result went, but in a fashion wholly different, controverted the conclusions drawn by Hume from the premises furnished by Locke and by Berkeley.

Kant, unlike Reid, found no satisfaction in Natural Realism. He insisted that this doctrine could be placed on no secure foundation in the absence of a critical examination, as its preliminary, of the nature of knowledge itself. Such an examination he regarded as a method by employing which we might reach what underlay the act of knowing, and with this in view he set himself to analyse and resolve into constituent factors knowledge itself. He was the early exponent of that sort of "epistemology" which the New Realists hold in contempt, but which they really reject less thoroughly than did idealists later than Kant, in so far as they show hesitation in allocating to objectivity features that are apparently of a mental nature.

The Königsberg professor saw clearly what Berkeley and Hume had done. They had reduced experience to

[1] Reid's Works, ed. Hamilton, p. 96.

an aggregate of self-subsistent entities, denying to them relations to each other that could be intrinsic and essential, or such as would in the main be of the character described in the technical jargon of to-day as internal and not external. Berkeley and after him Hume had thus violently deprived experience of those meanings which it possesses for knowledge of all kinds, and had so isolated these meanings as to render them an easy prey for the sceptics. Kant determined to bring the wandering meanings back within a fold where they would be as secure as experience itself. He set himself to prove that experience could not exist at all in the absence of at least certain of them. This he found to be especially the case with such relations of things as give them their quantitative aspects, and also their positions as depending, actually or possibly, on each other. In our judgments we determine things as being in such relations, and, therefore, if we wish to discover what the primitive characters of the relations are, we had better turn to the forms of judgment in ordinary logic and see what we find there. By doing this Kant found a dozen such forms or categories which have to be applied in order to constitute the experience of the actual world which we find when we look within ourselves or when we perceive what is external in nature. Apart from the significance or meaning which has made that world a real one for us it would not exist at all. He therefore pronounced his categories to be the very conditions through which experience was rendered possible. They are contributions which mind makes to its constitution. As such he calls them transcendental, indicating by this name that they are conditions of experience as it is for us, inasmuch as without them our experience could not be ; and he distinguishes the knowledge of experience got through them from knowledge that it aims at being transcendent, in the sense that it seeks to reach what lies outside actual experience, and cannot be attained in it at all.

Thought was thus presupposed by experience, and to thought it owed those characteristics, such as the certainty that two and two will always make four, and that every change must have a cause, which are made inherent in it as it is assumed in our daily life to be. It is thus that, for Kant, mind could not be resolved, as Hume had sought to resolve it, into a discrete series of mere independent impres-

sions, which, even for the latter, had the inexplicable quality of being aware of itself as a continuous unity. Mind, therefore, in so far as it performed its constitutive function, could not itself be an object in the experience to which it was itself giving rise. For in so performing its function Kant held that it gave their essential features to all objects which could arise for it. This it did by the very character of its operation. That operation took place by the imposition of two mental forms, in themselves empty, called time and space. In these mind arranged a raw material of orderless sensation which was there independently of it, and might be taken, for all Kant knew to the contrary, to proceed from some unknown and unknowable thing-in-itself. The empty forms just referred to were by the activity of mind schematised into replicas of the twelve categories, and in this way it had the means to hand of fashioning the raw material of sensation into intelligible forms, which included those, not only of nature, but of our individual selves as objects so constructed. As I have said, there were for Kant twelve modes or categories of thought in which this unifying activity operated. To enable these to do their work there were the two subjective forms in which the construction took place, space and time, and finally there was postulated the raw material of sensation and feeling which was arranged or schematised within the two forms by the activity of thought operating on the principles expressed in the categories. These last, which, as already observed, he limited to twelve in number, were derived from the study of the operations of thought in judgment as described by the formal logic of the day, in its material features an inheritance from Aristotle, and they included such relations as substantiality, causality, and reciprocity. In point of fact all these categories are primarily those concerned with mechanical arrangement, for beyond mechanical arrangement Kant's conception of experience as actual did not really take him. It was just this limitation of experience to the externality of mechanism which later on was to lead philosophers like Bergson to break away from Kant's epistemology, and to say that the real was something quite different from and of a higher order than anything that an intellect so limited could apprehend in experience. For the intellect, throughout the course

of experience as Kant conceived it, was confined, by the limits within which alone it could operate, to the apprehension of phenomena external to and exclusive of each other in space or time or both.

Kant's method was thus by a scrutiny of experience to determine the conditions which must be inferred as necessary to explain its production. These were the conditions which, as I have already mentioned, he called transcendental, and which he distinguished from inferences, however much suggested to us in our reflection, of what was transcendent, that is incapable of being in any way brought within experience.

The process was of course not one in time and equally not in space. It was foundational to reality in both, and so was metempirical. For Kant time was a form under which was brought all experience, inward and outward alike. Space, on the other hand, was the form or framework in which appeared what we call external experience. Because time and space were forms imposed by the mind, without which there could be no experience at all, they were *a priori* and the constructions made in them were of universal validity. Thus mathematical principles, the outcome of construction in these forms applied to an object-world which could only come into existence through them, were not only of universal validity, but, because their principles recorded the results of *a priori* construction by the understanding in pure time and space, they added to knowledge. Hume had apparently destroyed the claim to universal validity of all supposed mathematical truths of a synthetic kind. But Kant, by referring to the conditions which rendered mathematical experience possible, had restored them to their kingdom. He was able similarly to assert against Hume that the relations of substance and accident and cause and effect, which the latter had attacked, were essential relations in the construction of experience by the understanding, and therefore capable of establishment as universally valid *a priori* for objects of experience. But the understanding, just because it was confined to such experience as it could construct through its limited table of categories, could establish no reality other than a merely mechanistic one, for the restricted nature of the twelve categories through which understanding operated

in the construction of experience confined the field of reality to what that nature admitted of.

The world, however, although it might be said not to be more than such a finite experience, certainly meant more for us. This further and deeper meaning Kant found in the work of Practical Reason, which postulates, as morally essential, ideals that go beyond the empirical world due to judgments of Understanding, ideals of Reason, such as those of God, Freedom, and Immortality. These seemed to be required by the conditions of moral life, and although they could not be realised in experience, they were not on that account to be dismissed as unreal in a different sense. But Kant did not stop here. In his third Critique, that of Judgment, he showed the necessity, if certain most important aspects of the world as it seems were to be explained, of introducing, between the simple apprehension, on the one hand, by which we come to our actual yet limited experience, and the practical reason by which, on the other hand, we recognise moral ideals, yet another series of governing ideals which determine the judgment when it pronounces of things that they embody ends, or are so fashioned as to be beautiful. Teleology and mechanism belong to different orders of knowledge, and it was the task of the *Critique of Judgment* to reconcile them. This it did by pronouncing final causes to be merely regulative principles, necessarily regulative of the activity of the mind in surveying nature, but not actually included in the reality of objective nature itself. It was conceivable that another kind of understanding, not discursive like our own, which in its relation to the actual always proceeds from parts to other parts and to their mechanical aggregates, might grasp its experience differently, and find teleological universals, such as ends and beauty, actual in it. Such an understanding, if it existed, would be an intuitive understanding which would comprehend in direct perception all the phases that came before the mind, as the outcome of a single principle.

It was this notion of an intuitive understanding, taken up by Kant only to be laid aside, which proved fruitful in the hands of his successors, and ultimately gave birth to modern idealism. What Kant had accomplished was to turn metaphysical inquiry into a new

channel; it was for those who came after him to develop its course.

But if we glance back at Hume we see clearly the revolution which even Kant had accomplished. He had set criticism to work on the notion of mind as a thing, and had pointed out the insufficiency for it of such a conception. For him the essential nature of the mind lay in its foundational activity as intelligence, and not in its being, from the merely relatively justifiable standpoint of psychology, a thing or a property of a thing. I am speaking here of the transcendental synthesis or ego, which he inferred as the indispensable condition of there being any experience at all. Introspective experience would of course display a finite self of a different kind, a train of perceptions and feelings, constructed, like other experience, under the time form, and fashioned into an object in the world of perceptive experience. The pure subject, on the other hand, to which the unity of all thought must be referred, we could know directly only to the extent of being conscious *that* it existed. The form of self-knowledge, as perceptive of self as an object, tells us also of a "*What*," but then this is for Kant only knowledge of a phenomenal self as it appears under construction in time, a succession of states subjected to the form of inner sense in which we apprehend it.

It is the distinction between these meanings of the self that differentiates Kant from his predecessors, and enables him to refuse the path which led to Hume's precipice. The self was analysed by Hume into a succession of impressions and ideas as regards which it could be no more than passively recipient, if it could be even so much. If he did not call it a substance, with Berkeley, it was because he would not allow the title of the self to be even this. Such substantiality was not disclosed by his method, and for that method had no significance. But to the question how a mere succession of impressions and ideas could be aware of itself as such he had no answer. Here was a fact of experience which required something like the transcendental method of the critical philosophy to throw light on it, a method which should begin by asking the question how the experience with which Hume had sought to start was possible at all.

Hume had reduced reality to a succession of ideas of

the self, connected only by their association in the mind, and the self he had endeavoured to resolve into this succession and nothing beyond. Kant had shown that in order to account for the fact of our actual knowledge of even such a succession much more than a series of isolated ideas was required. He did not, like the New Realists, say that the relations which held these ideas together and united them into the whole which experience displayed, were themselves, though universals and not particulars of feeling or sensation, part of a non-mental world. So far as the raw material on which the mind operated in construction was concerned, he held that it was formless and came from an unknowable source, a thing-in-itself. Experience, in other words existence itself, was for Kant thus an appearance that was not ultimate, but one which was built up by a self which was not a thing but a transcendental activity of a mental character, setting up and filling in a framework of a limited character. In other language, instead of taking the world as a "That" from which he had to start, and behind which he could not get, he had explained it as the result of a process of construction out of epistemologically obtained elements. He might, if he had acted on the suggestions in his *Critique of Judgment*, have enlarged his conception of the self so as to make it not separate from or poorer than the world in which it found itself. Indeed, at one time he had hinted that the self, which was one root of experience, and the thing-in-itself, which was the other root, might have a common origin and a common nature. But as to this he was careful to make no definite pronouncement. His system, therefore, in the result proved on scrutiny to be defective. What was the self apart from its experience? What meaning could be attached to the antithetic thing-in-itself? What was the meaning of the antithesis? Why should the categories of the Understanding be limited to twelve, or at all, and the ideals of the Reason and the Judgment, as distinguished from the Understanding with its mechanistic categories, be excluded from any share in the constitution of experience as reality. All these questions and others were asked and presently answered in a sense different from what was admissible from Kant's standpoint. It was denied that knowledge could be laid, as he had

laid it, on the dissecting table and resolved into bits. Was it not only within experience that such a process could be essayed, and was not knowledge presupposed in its integrity as the foundation of the very endeavour?

It is no part of my purpose to write the history of philosophy, nor to show the stages through which the answers to the searching questions just mentioned proceeded after Kant's time. All that is necessary for the object of these pages is to bring out how the outstanding conceptions of reality arrived at after criticism of Kant bear on the principle of the relativity of knowledge.

As Kant had split up experience into two component elements, one of which was due to the mind as a factor and the other to the thing-in-itself, it was natural that divergence of tendency should know itself. Some philosophers there were who laid stress on the latter factor, the thing-in-itself, which provided the element of sensation or feeling. Others there were who took an opposite course and asked whether the operation of mind in constituting experience ought not to have its scope regarded more widely than Kant had done, and be treated as extending to matter as well as form.

I will touch first on the tendency of those who adopted the former course, and sought to approach reality from the side of its matter, but yet with the aid of the Kantian view of experience as requiring the intelligence without which it could not have the significance we find in it. This school turned its attention to the supposed thing-in-itself, and declared that its nature was not inaccessible to the human mind, as Kant had thought. The mode of access, however, they agreed with him in thinking could not be knowledge. But there seemed to exist a direct awareness which might be named intuition, and through this we should be able to ascertain enough to guide us to the character of the ultimate reality.

Of this new school a highly important pioneer was Arthur Schopenhauer. His work has been superseded by that of Bergson in an analogous direction. For that of Bergson is more thorough, and he has made use of copious material which science has provided since Schopenhauer passed away. Still Schopenhauer stands out as a great figure in the history of modern speculative thought. He did what William James did later on, in America, he

sowed the soil with seminal ideas. Of these the chief one was that while knowledge must, as Kant had shown, be impossible to conceive as a property of a thing, still reflection could get behind itself, and resolve even knowledge into a form of the activity of will.

Before looking at what this imports from the point of view of relativity, it is worth noting that the very character of the principle made it an unfortunate one for the founding of a school. Mathematicians can easily found schools of continuous thought, because their concern is a body of propositions about order in externality based on direct deliverances through sense. There are, therefore, more or less indisputable facts relating to space and time, on which agreement can rest, and which form an accepted test of initial truth. In logic and even in metaphysics, while this is not so to nearly the same extent, there may still be available general criteria as tests for our reasoning. They are less of an objective nature than those of science, but still, provided we are dealing with abstract reasoning such as a judge has to deal with in deciding on the validity of an argument on a point of law, a generally approved conclusion, conformable to these criteria, is at least intelligible. But when we come to the domain of what is supposed to be immediate awareness, to feeling for which it is a condition that the stabilising influence of reflection should have been extruded, the case is otherwise. Whether the form assumed by the doctrine is that of intuition as a basis of science, or of intuition as a basis of mysticism, the result is not materially different. For the basis reached depends on mere individual awareness to an extent that renders it in the main subjective and incommunicable. The particular has been separated from the universality or identity which belongs to reflection, and not to sense as such, and is the foundation on which the possibility of adequate communication rests. Systems, therefore, such as that of Schopenhauer, as a rule are accepted by no large school and are not permanent. Their value is as instruments for criticism ; they raise a negative which can be usefully incorporated as a qualification of what it is directed against.[1]

[1] Although Schopenhauer founded no school, he has left individual disciples who follow him with devotion, and some, at least, of these would deny what I have just said. One of his adherents of to-day,

This kind of isolation quite naturally fell to Schopenhauer, but it was intensified in his case by his difficult personality. He was impatient of the apparent neglect of his gospel by the professors and the universities, and he did not conceal what he thought of them. Why he never got a chair is not wonderful. Here are a few winged words (typical of many other sayings of his) which appear in the preface, written in 1844, to the second edition of his greatest book, *The World as Will and Idea.* Referring to the idealism still current in these days in the German universities, he remarks :

" This is a doctrine which it is only necessary to impose upon the reader at starting, in order to pass in the most comfortable manner in the world, as it were in a chariot and four, into that region beyond the possibility of all experience which Kant has wholly and for ever shut out from our knowledge, and in which are found immediately revealed and most beautifully arranged the fundamental dogmas of modern Judaising, optimistic, Christianity. Now what in the world has my subtle philosophy, deficient as it is in these essential requisites, with no intentional aim, and unable to afford a means of subsistence, whose pole-star is truth alone, the naked, unrewarded, unbefriended, often persecuted truth, and which steers straight for it, without looking to the right hand or the left, what, I say, has this to do with that *alma mater*, the good, well-to-do university philosophy which, burdened with a hundred aims and a thousand motives, comes on

R. H. Francé, has just published a rather notable essay on Relativity, with the title *Zoesis* (Munich, 1920). As the name indicates, the basis is Schopenhauer's principle that we are directly aware of Will, the final reality, in our bodily life, by the analogy of which we interpret the rest of the universe. It is out of the impulse of the will to realise itself that knowledge and through it its phenomenal objects arise. Our experience and our science have in consequence a biological character to which they always come back, and so have the final standards of reference by which knowledge and reality are determined. Francé seeks to show that all phenomena are, for science as much as for everyday experience, moulded by biological characters. He makes an attempt, as earnest as it is ingenious, to exhibit Einstein's principle and also the " Quanta " theory of Max Planck as the outcome of a system of reference thus determined. He carries his investigation into the region of chemistry also, and he exhibits command of scientific detail in each case. But for him the Einstein principle of relativity is of course only a particular application of a wider principle, which requires philosophy such as that of Schopenhauer for its interpretation. It is interesting to observe how views of this kind are now being put forward with much vigour in Germany.

its course cautiously tacking, while it keeps before its eyes at all times the fear of the Lord, the will of the Ministry, the laws of the Established Church, the wishes of the publisher, the attendance of the students, the goodwill of colleagues, the course of current politics, the momentary tendency of the public, and Heaven knows what besides ? "

The old cynic was left to live in solitude at Frankfort-on-the-Main, where, without wife or child, and accompanied only by " Young Schopenhauer," his dog, he used to take a daily walk across the river bridge. But his general knowledge, perhaps in consequence, became enormous. He levied a contribution on every form of learning. He was a master of the history of literature, as well as of art and music, and the evidences of what these meant for him are everywhere apparent in the books he published. His, too, was a really fine literary style. In short, if ever a man was equipped to be the philosopher of intuition it was Schopenhauer, whose appreciation of what can only be felt was not less than his intellectual grasp.

Among the few thinkers for whom he had any reverence Kant stands out prominent. He demands an acquaintance on the part of his readers

" with the most important phenomenon that has appeared in philosophy for two thousand years ; I mean the principal writings of Kant. It seems to me, in fact, as indeed has already been said by others, that the effect these writings produce in the mind to which they truly speak is very like that of an operation for cataract on a blind man." " For Kant's teaching produces in the mind of everyone who has comprehended it a fundamental change which is so great that it may be regarded as an intellectual new birth." " On the other hand, he who has not mastered the Kantian philosophy, whatever else he may have studied, is, as it were, in a state of innocence ; that is to say, he remains in the grasp of that natural and childish realism in which we are all born, and which fits us for everything possible, with the single exception of philosophy."

Schopenhauer none the less, as I have said, sought to go behind Kant's insistence on the foundational character

of knowledge, and this he was able to do, without glaring inconsistency with the principles of his master, just because the latter had confined this foundational character to what was sufficient to account for only a limited form of experience. Had Kant been in bitter earnest with the doctrine that knowledge was a final fact and all-comprehensive, his disciple could not have got where he did without openly breaking with the doctrine. But Kant had left as open questions the natures of the raw material of feeling and of the thing-in-itself. Schopenhauer, therefore, as Bergson has done since his time, proceeded to look further afield. He arrived at the conclusion that, however much in the rest of our external experience we are confined to what is phenomenal and arises from the operation of the understanding as constructive, in our direct awareness of our bodily life we have disclosed to us, in an intuition which is not mediated by thought, something of a wholly divergent nature, the will as the ultimate fact in reality. By analogy we extend this disclosure to things other than our bodies. Will becomes the "key to the nature of every phenomenon in nature." Besides will and ideas of perception nothing is known to us of any reality, or is even thinkable. That the self-disclosure of will gives rise to knowledge and to motives which arise only through knowledge, does for him not affect the point. For these do not belong to the nature of the will, which has nothing to do with consciousness, but to its manifestation in phenomenal form in a human being or an animal. What we are aware of as our

"voluntary movements are nothing else than the visible aspects of the individual acts of will, with which they are directly coincident and identical, and only distinguished through the form of knowledge into which they have passed, and in which alone they can be known, the form of idea."

That is why he gave his book the title of *The World as Will and Idea.*

So far as the idea, that is perceptive knowledge, is concerned, he agrees with Kant in treating space and time as forms in which intelligence constructs phenomena. But as regards the activity, attributed by Kant to mind

in the shape of the twelve fundamental modes of operation which were for the latter the categories, he differs. The activity of mind assumed for Schopenhauer, not these twelve forms, but that of a simpler " Principle of Sufficient Reason " according to which it operated in various modes. At the foundation, however, of the activity of mind and of its phenomenal activity generally, lay will, just as analogously Bergson was, later on, to find the foundation in a different form of creative activity with the character of unspatialised duration. Schopenhauer holds that he has adequately expressed the character of our conception of the relation of the will to the phenomenal world by explaining it to be, not the relation of an abstract

" idea to another idea, or to the necessary form of perceptive or of abstract ideation, but the relation of a judgment to the connection which an idea of perception, the body, has to that which is not an idea at all, but something *toto genere* different, will."

He thus distinguishes this principle from all other truth.

We infer, from the analogy of our own bodily consciousness, not only that will objectifies itself throughout nature, but that it does so in ever ascending grades, as in the vegetable and animal kingdoms. At the higher grades we reach a point where the individual can no longer get food for its assimilation only by movement following on mere stimuli. Movement has to be directed by motives, and so consciousness becomes a necessary further grade in the objectification of will. A developed brain appears, and knowledge, along with the world as idea, comes into existence.

" Thus knowledge generally, rational as well as merely sensuous, proceeds originally from the will itself." " Originally destined for the service of the will, in the accomplishment of its aims, it remains almost throughout entirely subjected to its service ; it is so in all brutes and almost in all men. Yet we shall see in the Third Book how, in certain individual men, knowledge can deliver itself from this bondage, throw off its yoke, and, free from all the aims of will, exist purely for itself, simply as a clear mirror of the world, which is the source of art,

Finally, in the Fourth Book, we shall see how, if this kind of knowledge reacts on the will, it can bring about self-surrender, i.e. resignation, which is the final goal, and indeed the inmost nature of all virtue and holiness, and its deliverance from the world."

Besides the grades of objectification which the experience of nature exhibits, there are, for Schopenhauer, still more fundamental gradations of the forms in which will objectifies itself that are manifested in innumerable individuals, and exist as their unattained types or as eternal forms of things, not themselves entering into space and time, which are the medium of individual things, but remaining fixed, subject to no change, always being, never becoming, while the particular things arise and pass away, always become and never are. These latter grades of the objectification of will are analogous to the Platonic Ideas, which are necessarily object, something known, and in that respect different from the thing-in-itself, but in that respect alone. The subordinate forms of the phenomenon, which arise out of the principle of sufficient reason that corresponds to the transforming activity of the perceiving mind through its categories, are not yet assumed here, but there is present the first and most universal form, that of idea in general, the form of being object for a subject. In this way the doctrine of degrees in knowledge and reality appears in the philosophy of Schopenhauer in a special fashion.

I have now done enough to admit of some glimpse into the manner in which he really breaks from Kant, whom he somewhat hypocritically extols as his spiritual father. He has seen that the way of Kant ended at a point where the path divided into two alternative and diverging further paths. The one led in the direction of divesting knowledge of every trace of having a merely instrumental character, and freeing it from the appearance of subjectivity; the other led to the retention of this character, and to the degradation of knowledge from the considerable position assigned to it in Kant's explanation of the real, by making it the mere servile instrument of his thing-in-itself endowed with a positive character. This Schopenhauer sought to accomplish by identifying will with what was for his master the *caput mortuum* of the thing-in-itself.

Bergson has sought to do something analogous in his theory of creative evolution. But, although he too has been a student of Kant, Bergson has broken away from him more completely. His philosophy is now so well known in these Islands that it is not necessary to do more than to point out the cardinal feature in its bearing on that principle of the relativity of knowledge which is the underlying conception of this volume.

The work of Bergson is not less important for its criticism of Kantianism than it is for its own constructive side. He directs his attack largely against the mechanistic character within which Kant sought to restrict experience. If there be only conceptions of this order which science must recognise as those to which reality is limited, then he does not dissent from the conclusion of Kant that the inferences which the latter felt bound to draw were unavoidable. But was the method of Kant one which was true to the facts as we have them in our direct experience? Bergson thinks not. He insists that knowledge, as Kant conceived its nature, transforms the real instead of disclosing its veritable character. Let us look first at what Bergson says about time and space. He puts them on different footings, attributing to time, when taken in its integrity, a much more intimate relation to reality than that of space. Looking closely at time we find that when intelligence tries to form an idea of the movement of objects it does so by constructing movement out of mobilities put together. Even in the case of a simple movement, such as raising the arm, what is really going on cannot be pictured in conceptual imagination. For the actual mobility cannot be pictured at all. Intelligence cuts its continuity into static stages after the fashion of the cinematograph. We are always spatialising time in this way. It was this that gave rise to the apparent insolubility of the puzzles propounded by Zeno. When we try to think of time we represent it to ourselves under the form of a line made up of parts external to one another. The temporal series is conceived as made up of odd moments analogous to points in space.

At this point in Bergson's reasoning the question suggests itself whether we dare assume that thought only visualises its objects in this spatial fashion. Surely the use it makes of the images it shapes is not to regard them

as affording the *ultima ratio* of reality, but to treat them as fraught with meaning, as the expression of concepts which are more than their symbols taken as self-contained could express. How otherwise do we have the conception of a living organic whole as giving significance to its members by being present in them? This is no image of a spatial distribution. Bergson's own principle is that the real is duration, but not mere succession of events in time, treated as though separate in space. It is an important principle, but it requires to be made intelligible, and that is possible only through an intelligible conception, which goes beyond any image. When he tells us that we must give up the method of construction which Kant employed, and look for experience freed under one aspect from the moulds into which knowledge casts it, he makes a point which is good against Kant, but seems good only because of the limitations which Kant's doctrine of the mechanistic character of his categories imposed upon him. Bergson holds that knowledge cannot give us access to what underlies spatialised time, in which part succeeds part. He therefore refers us to direct intuition, as disclosing the truly real as distinguished from what we make it appear to us, a concrete duration, or creative evolution, in which the recasting of the whole is always going on. Something like this Schopenhauer had said before him when he suggested that we have immediate experience of the will in nature. But Schopenhauer followed Kant in affirming the subjectivity of time as well as of space, and Bergson's form of the doctrine is therefore quite fresh. His fundamental principle is that intuition enables us to escape from spatial and mechanical views, and takes us straight to reality, the nature of which is to be duration that has action as its inmost character, and in which the activity is creative, a continuous elaboration of what is absolutely new.

For Bergson it is only in such an intuition that ultimate reality, or what properly might be called that which is of an absolute character, can be given. Everything else falls within the province of analysis, the operation on its subject-matter of intellect directed *ab extra*. By intuition, he tells us in the *Introduction to Metaphysics*, which he has written with a lucidity of diction with but few instances to rival it in the whole history of philosophy, that he

means the kind of intellectual sympathy by which one places oneself within an object in order to coincide with what is unique in it and consequently inexpressible. "Analysis is a translation, a development into symbols, a representation taken from successive points of view from which we note as many resemblances as possible between the new object which we are studying, and others which we believe we know already." Such a representation can never be complete. Yet it is necessarily the method of positive science, which always works with symbols. But metaphysics has as its object to dispense with these misleading symbols. It is so that we get at the meaning of our own personality. There are no two identical moments in the life of the same conscious being. Take the simplest sensation, suppose it constant, absorb in it the entire personality. The consciousness which will accompany this sensation cannot remain identical with itself for two consecutive moments. For the second moment always contains, over and above the first, the memory that the first has transmitted to it. A consciousness that could experience two identical moments would be a consciousness without memory. It would die and be born again continually. It would be unconsciousness. The unrolling of the duration of the inner life which we reach only in intuition resembles, indeed, in some of its aspects the unity of an advancing movement, and in others the multiplicity of expanding states. But no metaphor can express one of these two aspects without sacrificing the other. The inner life is all these things at once, variety of qualities, continuity of progress, and unity of direction. It cannot be represented in images, any more than in abstract concepts.

But after all it is only by appealing to intelligence that Bergson has been able to get so far, and to avoid a sceptical denial of the possibility of knowledge. For his intuition is in truth akin in its nature to what he contrasts it with. But for intelligence his intuition would surely have been mere unconsciously directed instinct and have remained so. It is intelligence that has enabled him to transcend the point of view of intelligence itself as he conceives it. Intuition, in the significance it possesses for him, resembles knowledge more than it is different from it. It is upon knowledge that he falls back when he has to tell us what

intuition reveals, even though it be merely to explain the difference between the two.

I am therefore unable to differ from the conclusions of an American critic of Bergson's system, Professor Watts Cunningham, who has worked out a set of doubts on this point similar to my own in a brilliant essay on the *Philosophy of Bergson.*[1] We read over here a certain amount of the philosophical literature which is being poured out in the New World, but not as much as is desirable. For America has been bringing freshness of mind to bear on metaphysical problems ever since the days of James and Royce, and this freshness is as apparent in the treatment of idealism by her thinkers as it is in the fashioning of that new realism which has had its home at Harvard and elsewhere in the United States, at least as much as it has had a home over here.

Therefore I do not apologise for quoting Professor Cunningham when he is expressing in his own vigorous way a conclusion not different from that to which I have myself come in the question at issue. His books are as yet less known on this side of the Atlantic than they might well be. But he is still a young man, and more is likely to be heard of him later on.

"Thought," he says, "is a process of interpretation whereby experience is unified and organised. It is the life of the mind which finds expression in conscious experience as a totality. It is evident in common sense and science, in superstition and philosophy. It gives us the physical sciences, but it does not stop there. It is responsible for the biological and the mental sciences, but it does not stop even there. From it come our art, our religion, and our philosophy. It breathes through all the ramifications of our experience, and gives whatever insights we have which are worth preserving. The true, the good, and the beautiful are expressions of it; for it is our very self-consciousness."

If Professor Cunningham is right we do not remain in any "strait-jacket of static and spatial moulds." For to think the world means simply to interpret it in just such

[1] Longmans, 1916, p. 91.

an infinite variety and elasticity in combinations by intelligence as it demands, whether their characters be those of mechanism or of teleological ends operating as final causes. It must be that knowledge transcends the categories of mechanism and is something more than an abstract understanding of the kind within which the *Critique of Pure Reason* would restrict it. And when we are asked to infer from this restriction that we have to take refuge in an intuition which is supposed to be wholly diverse in its character from any possible knowledge, we naturally ask whether he who makes the demand has not made it only because he has unduly narrowed the meaning and range of the knowledge which gives significance and system to our experience. There is a formidable point made in what Professor Cunningham says in a later passage of his book.[1] Discussing Bergson's view that there is no real teleology in the world process as intelligence represents it, inasmuch as the process of accomplishing an end must consist solely in the reproduction of a fixed and static plan, the American critic declares this view to rest on the unjustifiable assumption that will and intelligence are mutually exclusive.

"The absurdities of the conception of creative evolution, which in the last analysis must be defined as merely an infinite progression without a goal, may all be traced to this fatal abstraction. When we remove this deficiency from our analysis of conscious experience and clearly recognise that intelligence is dynamic, that, in other words, intelligence and will are only two terms which we use to refer to two sides of the same reality, we at once see that the abstract sort of teleology which Bergson so effectively criticises, and for which he substitutes his conception of creative evolution, is replaced by a more concrete teleology, *creative finalism*, in which the controlling ends themselves exist and grow precisely in their own creation. This view provides for the reality of the temporal series in such a way that the question 'How is time real?' is not an insoluble mystery. For it defines the evolution of reality in just those categories which conscious experience exemplifies and makes determinate—a claim which cannot successfully be made for the theory of creative evolution."

[1] p. 179.

The very experience of enduring through time in an apprehended succession of continuous and connected particular experiences seems impossible unless a future is implied at every stage in that experience taken as a whole. Our aims and purposes enter into our present content and mould it. The actuality of the future is implied as a moving influence. In other words, ends are at every point, in one form or another, determining factors, and we bring in again the teleology which Bergson would exclude, but in a form in which it is freed from the spatialising tendency to which he objects.

As to what time really means, other questions arise, of a character different from those which we discussed in connection with physical relativity in measurement. Finite experience seems to be inseparable from a temporal element of some sort. And yet if time be final, even to the extent in which a temporal element characterises the space-time continuum, then unless that continuum itself is no more than a conception appropriate only to a stage in reality, there can be no completed whole, such as is the ideal towards which we aspire in our experience and our abstract knowledge alike. Time is real for the finite individual who as an object in experience is in it. But he appears to be the expression, even in this his finiteness, of an entirety more perfect; within which he and time alike fall, and in which time itself is completed and absorbed. It belongs to our "That." Away from it we cannot get. Yet conceptual thought points to it as being rather a moment in a whole within which it falls, than what can be expressed in terms of itself alone. Otherwise knowledge and experience would seem to be unintelligible, relating as they do past, present, and future, in a fashion such that each mutually implies the other. Here again the principle of standpoints comes in.

Bergson's duration represented as final reality, and Mr. Bradley's Absolute, in which thought is to coincide with feeling in what is different from both, thus seem to present obscurities that are analogous. The difficulty that each conception raises is the inevitable question how it has been reached. In both cases, the conception must be attained through knowledge. How, then, can it in its nature transcend knowledge? Is it not more natural to say that the forms in which we know are limitless, and

that knowledge can by their aid transcend, not merely mechanism, but the reflection that is relational in so far as it throws its objects into the separation that is distinctive of judgments of the understanding ? It may even be that something tacitly resembling the intellectualism of a larger order, which became the instrument of idealism after the time of Kant, has really been reintroduced by Bergson and Bradley alike, though in different forms, both directed to the overthrow of the doctrine which Kant bequeathed.

I will now turn to some points in Bergson's doctrine which have been the subject of keen criticism.

CHAPTER XIV

AN AMERICAN CRITICISM OF BERGSON

M. Bergson has done a great deal towards bringing out what is inherent in the character of experience. But if the history of philosophy in the nineteenth century has established anything it has shown that he has hardly done enough. He might himself prove to be very ready to admit this. He does not claim to have given to the world any complete or exhaustive system of philosophy. His utterances are characterised not only by grace of expression, but by a modesty which is distinctive of the man and of his standpoint. In this respect he is wholly unlike Schopenhauer.

In a recent book, *L'Énergie Spirituelle*, which Professor Wildon Carr has translated, under the title *Mind-Energy*, in a style which is as distinguished for excellence as it is characterised by affectionate reverence for the author and his great qualities, Bergson makes clear his standpoint. He holds that there is no principle from which the solution of the great problems can be exhaustively deduced. Yet the actual facts are indicative of converging directions. What the lines of facts converge towards is the conclusion that philosophy can no longer be the work of any single thinker. It must increasingly call for corrections and retouches; for progress, like positive science, and, like that, for work of collaboration.

But M. Bergson does not, so at least it seems to me, free himself from the dominating influence of a single principle. He is held by a view of the character of reality which will not let him escape from it, admirable as is his open-mindedness. It appears to confine him closely. Let us see where it appears to make him fall short in his treatment of reality.

If thought includes the whole activity of mind, practical

as well as theoretical, there does not appear to be any sharp line of demarcation to be drawn between thought and other moments that disclose themselves in the constitution of experience. It is present in all phases of that experience, and, on the other hand, apart from and outside them it cannot work nor even possess meaning. When we think abstractly it is in images and metaphors. What is out there before me has significance and is for me real only in so far as I interpret it. But even when I try to think most abstractly I never get away from the actual or, from what for this purpose is the same thing, images of the actual. Meaning is everything, but then there must always be that which expresses the meaning. We separate the meaning from its embodiment just because of our tendency to conceive mind as a subject apart confronted by an object that exists independently of it. Finding that this is so, we tend to come to what critics of Green have pronounced to have been with him a timeless self, or an absolute as a *totum simul*, or an object which has its reality only in its relations. But, then, what if there be no aloofness between percipient and perceived? The simple way of looking at things, the way of the ordinary man, does not suggest much aloofness. He thinks of himself as an individual person, a mind, existing in a definite part of space and time, and confronted and surrounded by an environment which controls him, and which consists largely of other minds and their work. From his sense of his position in society and the commonwealth, down to his relation to his wife and children, he feels that he exists in and through this environment, and that it is not foreign to him. It is only by reflection, that is to say by abstraction, that he detaches himself from it even in thought. Solidarity with his intimate surroundings is of the nature of his very life. It is only within this solidarity and as based on it that he draws the line, which is always provisional and for a purpose, between himself and what is not himself. The foundation for him of all reality is just his experience, in the wide sense in which it includes his whole mental content, interpreted in the various meanings by the light of which he reads it, and which impart to it a significance which is more than individual. But this experience includes time and space. It is true, as Bergson has pointed out with great

force, that these terms are ambiguous. We spatialise our images of time unduly. The elemental-time experience, apart from the distorting influence of reflection about it, is rather of the character of unbroken continuity or flow, analogous to the world-line already discussed, than of a succession of independent items in a series. But the moment we begin to reflect we begin to separate present from past and future, and to erect what we speak of as present into something which is present existence and is fixed as such by reflection; as contained in a duration, no doubt, and not within a mathematical moment. Now without reflection there cannot be that human experience which is the only experience we have, and the result is that time begins at once to possess a significance which, if secondary, is highly developed. Past and future are held together with the present, and we have to recognise that as a condition of our experience it must in some sense be more than what is immersed in the current of spatialised time. In no other way can we make intelligible the experience of the past in relation to the present. But this does not of necessity imply that the basis of personality is a timeless self. When I look back and recall what I did and felt thirty years ago I am holding together and comparing past with present. But it is *my* past experience, emotional as well as cognitive, that I am comparing with what I have now. The experiencer has changed continuously and in detail, as well as the experienced. Although from one point of view it is the same self that has felt and known throughout, there has been, from another standpoint, a time process for the self as well as for the not-self. But this time process has been a time process none the less for a self that in an essential fashion appears to have overreached time as a factor or moment in its totality, but only as a factor or moment. The actual self is, in an aspect which is a necessity in its constitution, at once present, past, and even future. None the less time is neither external to it nor its creature. The foundational basis of knowledge and experience is an experience which presents itself as at once in time and out of it. That is why experience cannot be conceived as a thing or even as an event. But why should we seek to conceive what is foundational by the analogy of anything but itself? Its only appro-

priate terms are its own terms. We must not think of consciousness as a property, the consciousness *of* a person. The person *is* consciousness. He is essentially activity and process, but it is activity and process aware of themselves and existing only in this awareness, an awareness within which all distinctions, including that between real and unreal, arise. In other words consciousness is implicitly self-consciousness, and is fragmentary and incomplete when conceived otherwise.

Now if this be true the difficulty in regard to time has arisen because time has been inadequately conceived. The view of time as a succession of discrete units, as what Bergson has called mathematical time, is no more adequate to its nature than is the view of it as a mere empty or blind continuum, flowing on unbroken and uninfluenced by ends or purposes. But if time is only one factor, although one logically essential, in that underlying activity of the self apart from which the universe has no meaning for us, then its relation to ends to be realised and to organisation in the interest of these ends becomes intelligible. If time falls within mind and does not lie outside it, it may be properly regarded as a principle through which the self organises its content, and not as a mere succession of disconnected events external to each other.

I find myself in agreement on this point with some things written by the American thinker whom I have already quoted, Professor Watts Cunningham, both in his *Philosophy of Bergson* and in an essay on "Coherence as Organisation," published in a recent volume of Philosophical Essays by American Writers.[1] After criticising the contracted view of intellectualism which, influenced by Kant's restriction of the table of categories, characterises Bergson's writing, Professor Cunningham points out the value of the enlarged conception of temporalism which Bergson has introduced. Time is, he holds, fundamental in reality.

"For my part," he says, in concluding his book on Bergson, "I must confess myself unable to see how it can legitimately be denied that intellectualism logically

[1] *Philosophical Essays in honour of James Edward Creighton*, New York, The Macmillan Company, 1917.

involves some form of temporalism, and by temporalism I mean the doctrine that time is genuinely predicable of reality. For it certainly is not easy to understand how it would be possible for the universe to meet the demands of intelligence if the universe were in its essence static and pulseless and rigid. If intelligence demands anything of the universe at all, it would seem to demand that there be room enough there for its teleological categories to bud and grow. Surely there is no necessary inconsistency between an intelligible universe and a temporal universe; in so far as Bergson and the anti-intellectualist propagandists generally assume the contrary they really assume the main point at issue. Nor, on the other hand, are we driven to the conclusion that a reality of which time is predicable is *ipso facto* subject to blind and irresponsible chance. A growing and changing reality, notwithstanding the fact that it is dynamic, may nevertheless be systematic; in so far as intellectualists tend to deny that such is conceivable they apparently base their contention upon the assumptions of that type of intellectualism which they themselves not only admit, but insist, is outgrown. The principles of true intellectualism seem to me to be no more consistent with a sterile absolutism than they are with an erratic creative evolution; they rather demand of the real that it be a process—a process in which ends are potent, and in which these ends are themselves dynamic and evolving."

In the essay to which I have referred Professor Cunningham carries his criticism into the camp of such idealists as hold mere logical consistency to be an adequate conception of truth. He quotes with approval Professor Sabine's question whether:

"If truth is the whole and if totality is the ultimate principle of individuality and value, and if thought is just the *nisus* of experience towards its completeness, what is this more perfect experience to which judgment is not the key? Is it altogether perverse to suspect that the defect is not in the relational form of judgment, but in the coherence theory of truth? Is it not really probable that the concrete universal is an inadequate logical principle?"

To the question so put Professor Cunningham offers an answer:

"If the coherence theory is to be saved, the transcendental principle of unity within experience upon which it insists, and which it calls 'thought' or 'reason,' must be brought definitely into touch with the concrete situations in which it is supposed to function, and must be so defined as to imply an intelligible view of the temporal order; in short, that coherence must be so construed as to place the emphasis on organisation of ends rather than mere abstract logical consistency."

He thinks that the coherence theory was in its origin a reaction against Hume's atomism, and that Kant's counter-theory of the transcendental unity of apperception, with its emphasis on system as the criterion of meaning, was the origin of the coherence doctrine. The attack on the doctrine by the pragmatists is directed, not so much against the general insistence on system and unity within experience, as against the sort of unity postulated. For if the unifying principle is to be taken as an immanently constitutional and organisational reason, which holds over from one moment of experience to the next, and is in this way transcendental in the Kantian sense, the conception lays itself open to two objections. First of all the unity so posited is too far removed from, and too externally related to, the concrete instances in which it is supposed to operate, and is no more than a form or mode of some supra-empirical ego. The true doctrine, say the critics to whom Professor Cunningham is referring, is that only the relevant can be true, and that the relevant must always be relevant to a purpose. Then again, the principle of unity assumed by the coherence theory fails to do justice to the sort of unity which is actually found within concrete experience. As a matter, these critics say, of indisputable fact, experience grows in time, and as a result involves a considerable degree of discontinuity and hesitancy; but the unity posited by the coherence theory is timeless, and therefore the theory fails to discover any ultimate significance in the temporal order. Temporal discreteness seems on the face of it to have little to do with abstract consistency. In short the coherence theory

is incompetent to account for the reality of the time order, and implies that ultimately the temporal must be transcended as belonging to an inherently imperfect type of experience which cannot be regarded as of ultimate worth.

As against Kant, Professor Cunningham agrees with this criticism. Kant only substitutes another abstraction for that of Hume, an abstraction which is in reality wholly separated from time. But following out his own interpretation of Hegel in another book which he has written on *Thought and Reality in Hegel's System*, Professor Cunningham presses the point that Hegel and the Neo-Hegelians have sought to define thought in terms more concrete than those of Kant, and to bring the transcendental element within experience into more direct and vital contact with the concrete empirical situations in which it is meant to function.

In saying this Professor Cunningham seems to be well founded. There is a remarkable passage in Hegel's *Phenomenology*, to which he does not refer, but which forms part of a criticism of those who underrate the significance of time, a criticism which confirms Professor Cunningham's view. This passage has already been quoted at p. 60. Hegel, as is at last beginning to be understood, did not aim at deducing objective reality from thought, the That from the What. The distinction between these fell for him within experience, not outside it. Pure feeling and pure thought were alike abstractions arising within the living content of ever-active self-consciousness, and owed their existence to that activity. The content of consciousness, or experience, was, on the one hand, no mere succession of isolated and mutually exclusive units. On the other hand, it was not the construction of thinking alone. Nature and Logic were abstract aspects for reflection of the actuality to be looked for in mind taken in the widest sense. Mathematical methods are accordingly for Hegel never wholly adequate to the real. Time is the general counter-aspect in nature which corresponds to the activity of thought itself regarded in abstraction, and the essence of time is continuous change. The temporal order has thus a significance to which the abstract form of the coherence theory does scant justice. Professor Cunningham points this out. He declares that the temporal aspect of experience is fundamental and is

basic. The form of the systematic unity of human experience must accordingly be restated, and he suggests, as against Bergson and the adherents of the purely logical principle of the coherence doctrine alike, that the latter must be, not abandoned, but restated as one of organisation of ends. But such an organisation of ends can only be stated as a system. This brings us back to the value of ends with their standards, and in that form to rationality. For truth is the expression of system. Can the doctrine that the truth is the whole, and the test of coherence to which it leads, be accepted? Professor Cunningham thinks that this question may properly be answered in the affirmative, provided that thought is recognised as possessing certain fundamental characteristics. In the first place it must be interpreted as that in experience which includes the various so-called states of consciousness, both cognitive and emotional. Thought is no event over against any form of experience, practical or theoretical, but the very principle of organisation through which the forms of experience are a unitary whole and belong to a single experience. In the second place it is characteristic of thought to hold over from one moment of experience to another. For it is a principle and not an event, and its essence is to be past, present, and future at once. Although the time order is a fundamental feature of experience, yet thought overreaches throughout it, and by doing so renders possible the continuity of past, present, and future. Thus even the ends which govern the action of the individual may originate in his past history. In the third place, inasmuch as thought includes successive moments, it cannot itself be said to belong to any one moment. It cannot be static, but is always self-evolving, and is a principle which takes the form of a temporal process of experimentation, trial, and error. In so far as the current coherence theory tends to destroy the significance of time Professor Cunningham cannot agree with it. For truth, as it has meaning for us, is concerned with a present concrete experience, which is both discontinuous and continuous, and is therefore temporal. The criterion of truth as logical consistency is for him in reality a progressive co-ordination of ends, so that the criterion is not really separable from reference to a temporal stream. Finally,

thought cannot be regarded as "a mere conscious state existent within some particular psychological history." It is rather to be found "chiefly in the physical and social orders, in the world-process itself." Of course thought

"exists in psychological experience, but then we must regard it as something gradually to be attained, as an acquisition and not as an endowment, a progressive process of creative effort which matures only through contact with the objective order, and which becomes aware of its own fundamental nature through its unfolding. In short thought must be said to have its habitat primarily in the objective order and only secondarily in the individual."

Such a view, says Professor Cunningham, will of course be attacked as bringing back the trans-experiential elements of the old coherence theory. But he replies that if there be one lesson which the history of philosophical inquiry from the time of the Sophists down to the present has taught us with unmistakable certainty, that lesson is that a theory of truth which seeks its criterion in merely subjective experience ends at last in giving us no criterion at all. The failure to recognise this has been fatal to pragmatism. It is true that so far as the various "states" of consciousness are concerned they exist nowhere outside of a psychological experience. This is the case with feeling in its various forms. But is it true in the same sense of rationality? My reason exists in my own individual mind, but it is not less true that it transcends my experiential limitations. "In order to identify ourselves with objective rationality there is no obligation imposed on us to lift ourselves by our own bootstraps." To be rational is just to be identified with the objective order of the universe. "Surely science exists in no man's mind, but surely, also, every lowest son of Adam is in some sense capable of science." Otherwise, and if reason were not supra-psychological, the whole history of scientific achievement were utterly inscrutable, and, for that matter, the whole history of society and even of the individual himself.

"Thought, upon which the coherence theory lays so

much emphasis, must not be supposed to be an abstract principle, standing over against the various states of consciousness, which it somehow mechanically and mysteriously binds together. Rather must it be conceived as the principle of organisation through which these states exist, as they do exist, and which, because it is a *principle*, is more than these states taken either distributively or collectively. Once again, because it is a principle of organisation within experience, it must hold over from one moment to another; on the other hand, it is not non-temporal and cannot be so conceived, since organisation *ipso facto* involves time. To speak of a timeless act of thought, as Green does, is a contradiction in terms, if thought is taken in the sense here insisted on. Finally, thought is not a process which is confined wholly to an individual biography, as is a feeling of pleasure or a particular desire; thought is rather the principle of objectivity which spans the gulf between the individual and the world."

Such a view of the real application of the coherence theory meets, for Professor Cunningham, the difficulty of the supposed abstractness of the theory. For rational organisation of this kind belongs to concrete experience. It is the determination of value within a given set of circumstances. "The truth is the whole" just means that, under the conditions as they are discovered to be, the true is that which complies with the demand of experience for rational unity. The pragmatist who says that only the relevant is true, and that relevant means relative to a purpose, is right enough so far as he goes. But idealism does not stop where he stops. It goes further and offers a standard by which the varying degrees of relevancy may be judged. Mere isolated desires and interests are logically valueless; what is essential is the standard of an organised whole in which these desires and interests have their places. The problem which arises is more than one of mere logical coherency. Reason cannot be defined in isolation from concrete experience. To quote Professor Bosanquet,

"For thought which has become expert in this world, such media as sound, colour, form, rhythm, the sound

that with other sounds satisfies the educated ear, the colour that is demanded by a colour scheme, are, I take it, as necessary and rational as the conclusion of a syllogism."

It is a mistake, according to Professor Cunningham, arising from the abstract form in which the coherence doctrine has been put forward, to say that teleology is an inadequate category, and that what is novel is in last analysis unintelligible; in other words, that the real is timeless, and the temporal order mere appearance. If experience could be conceived as that in which disruption and selection could not occur, organisation, which is based on selection, could not be predicated of it. Such an experience would be merely static. A timeless Absolute is thus excluded. The temporal alone is intelligible.

I have quoted Professor Cunningham's bold pronouncement at some length, because I think it is one which raises important matters for consideration. In the first place it embodies the tendencies of a new school of idealism which is growing up in the United States, and which contains a number of thinkers distinguished alike by freshness of outlook and by comparative youth. In the second place this interpretation of idealism is based on a careful study of Hegel as well as of Bergson. The claim to have brought near to each other the conclusions of those two thinkers is an impressive one. Has it been successfully asserted?

In a considerable measure I think that it has. Judged by a very important test, that of conformity to experienced fact, what is suggested seems to bring us nearer to the actual in life than does the doctrine which reduces mathematical time to appearance. Of course the acceptance of time as a genuine form of reality is attended with difficulties. But these appear to arise from misconception. If time be regarded in the light in which Hegel himself regards it in the passage quoted earlier from his *Phenomenology*, the difficulties are less. For time, as he there describes its essence, is no more mere mathematical time than is the duration of Bergson. It is not exclusively discrete any more than it is exclusively continuous. Because it is the counter-abstraction to the movement of thought of which the characteristic is the combination

of identity with difference, it is both continuous and discrete. Now in time conceived mathematically the stress is mainly laid on the second of these aspects, and it is not pointed out that each is itself an abstraction which necessitates the other, just as difference necessitates identity.

Then between time taken abstractly and the thinking of which it is the counter-abstraction a gulf is fixed, illegitimately, if Hegel is right. Things cannot for him be divorced from thoughts, or thoughts from things. In mind, which is in its nature always concrete experience, the two appear as moments which have reality there alone. They are not things apart. They are simply diverse aspects of the real, and as abstractions they pass over into each other, excepting in so far as the reflective activity of mind can hold them apart.

Now this view ought not to be a startling one. We have already seen its truth exemplified in the case of biology. There the relations of mechanism are superseded by those of development in fulfilment of an end. Not only is the externality of the parts into which space is resoluble overcome, but the succession of events in time is likewise overreached by ends which do not appear as separate events in time, and which yet control and mould the significance of such events. In the organism the whole exists in the members and is everywhere present in them, overcoming their externality to each other in space as well as in time, and endowing them with life and meaning. In the organism there is manifest a development from birth to death, a development, too, controlled in the interests of the species to which the individual belongs. The end governs in these respects also, just as it supersedes the relationship of externality. Here the end is no external force or event. It is simply the fundamental character of the phenomenon, a character which endures through succession and change and is present throughout their course, moulding the development to its own purpose. There is apparent discontinuity at moments, there is accident, there is the contingency inseparable from externality. But the tendency remains unfaltering. There is no whole as perfect in its entirety as is the activity of mind, which is explicitly or implicitly present in every one of the manifestations to which it gives reality and

meaning. But the analogy of living is much more nearly that of thinking than it is that of mechanism, with its disjunction of external parts aggregated *ab extra*. Both in life and in thought space and time are transcended, in the sense that, though there, they are there as moments only in a greater entirety, which, inasmuch as it overreaches, transcends them. We live as individual personalities amid and by means of foreign material which we cannot wholly control. Contingency is everywhere raising its head. We think in images to which we cannot wholly assign their limits of validity in our logic. Our life and our thought and the mechanical appearance which confront us are aspects of a reality which include them all in its phases, the concrete experience which is the only reality that has meaning for us, and in terms of which we must somehow interpret even what we try to conceive as lying beyond it.

Such an experience manifests itself by its very nature at stages which differ in their approach to completeness, stages which I have spoken of as degrees in truth and reality. Now these stages do not, as I have already pointed out, necessarily exist apart in space or succeed each other in time. Knowledge sometimes begins with the higher degree of completeness and goes back to what is more abstract and so less perfect. When we rationalise experience by reducing it to terms of mathematical formulæ we rob it of most of its riches. But on the other hand we transcend the limits of immediacy in this fashion and advance knowledge. Moreover, the procedure is in harmony, so far as it goes, with the facts. The properties of straight lines and perfect circles hold even of what are the least perfect exemplifications of these constructions, that is to say, wherever the exemplifications can be treated as illustrating them they conform to the properties. So, too, in the case of an organism its action conforms to mechanical and chemical laws. There is no reason to doubt that the laws, for example, of the conservation and degradation of energy apply to the instance of an organism just as much as in that of a machine. But although this phase is a true one it has been, like that of the perfect circle, isolated by abstraction, and it does not represent the whole truth. The conception which the phase exemplifies is not a complete conception or at the highest

possible degree of truth and reality. It is the most concrete that is the most real, and one wonders whether certain general concepts among which we seem to move very easily, such as those of mass, atoms, molecules, and energy, will not also turn out to have been mere abstractions inadequate to the reality of which they purport to be descriptive. Instead of trying to build up reality out of such supposed simple existences, it may be that we shall come to regard them as aspects, for reflection only, of phenomena of a richer order, from which they have derived their meaning by a process of analysis in its nature artificial. When at an earlier stage we were considering the relation of the environment to the organism, we observed the play of this sort of abstraction, and the artificial view of reality to which it gave rise. It may be that the play of abstraction obtains right through that realm of nature, and has led us into making distinctions that are not in truth of the hard and fast character we suppose.

But this does not of necessity imply that such abstraction is error. It is rather a necessity inherent in the character of human knowledge, the inevitable procedure of a mind whose organ consists in a human brain and body. It is the method which characterises knowledge. In the chapter in the second volume of his *Logic*, in which Mr. Bosanquet discusses the coherence doctrine, he speaks of it as a standard applicable to discursive thought, but a standard of truth which itself does not pretend to be the perfect or all-inclusive experience. He rejects, as I think rightly, the notion that truth consists in the correspondence of an idea with something external to and independent of it. That, as we have seen earlier, is truth only in a limited and primitive aspect. He places truth as consisting rather in the systematic coherence of judgments which enter into the very nature of reality. These judgments profess to express the nature of the real so far as it can be uttered in a system of predicates and relations. Yet, for Mr. Bosanquet, the nature of the highest conceivable experience cannot be such a system of predicates and relations. Thought, he holds with Mr. Bradley, dissociates and so destroys any experience which could claim to be perfect. That is because he takes thought to be inherently relational and to give us no more than

what is merely appearance as distinguished from reality. Yet reality is operative, for Mr. Bosanquet, in truth, and in this limited sense correspondence results. The explanation is that judgment, which gives the appearance of reality, but only in the relational form, does its best to reach true individuality. It can never do so because individuality lies beyond that form. Perfect coherence is thus impossible, for the perfection of truth lies in a reality different in kind. Truth is no more than a fulfilment under its own conditions of the nature of reality. If it be said that therefore truth cannot be quite true, the answer for Mr. Bosanquet is that no experience short of perfect reality is ever quite itself. Its fullest completeness lies in a more perfect form of experience which is beyond itself.

But Mr. Bosanquet makes a reservation which appears to me to mark a departure from the tendency of Mr. Bradley's doctrine, and to bring him nearer to the doctrine of degrees. For he goes on to say that the worlds of our experience have been fundamentally transformed and reconstructed by thought, working in and on perception and general experience. These worlds have their existence and quality in one. "Our worlds are all different, and yet all apparently solid, and clothed in inseparable contents, which nevertheless are of our own discrimination and attribution." These are not, as a rule, taken as predicates. They are regarded rather as belongings of reality, although we can separate them and take them as predicates. The interesting point about the supposed individual subjects in the judgments of such experience is their relativity. Thought has made them, and can unmake them, and indeed is always remaking them. Thus a quasi-real world is, for Mr. Bosanquet, continuously being deposited as part of the work of thought, and thought is therefore in itself not so far removed from the nature of a perfect experience as the exclusively relational view would lead us to think. But this quasi-real world is of a plastic nature. Its aspects never remain fixed or static, nor wholly cut off from a fuller character of reality.

Is not this conclusion one that comes near to that which treats reality itself, as well as our knowledge, as disclosing itself at a variety of levels which form intelligible stages in the logical progress of its self-development? And may

not truth lie rather in consistency in this development of the continuity of the logical progress from each level to the larger level beyond it, than in the attainment of a goal which thought itself cannot define and which must remain for ever an ideal that cannot be realised ? If so, it is the striving that contains the truth, the truth of quality. And the ultimate reality is just what is expressed in the reality of this striving. It is in the world of ends that we must seek our standards. Was Hegel, then, far wrong when he declared that within the range of our finiteness we could never see or experience that the end had been really secured, but that the consummation of the infinite end lay in the removal of the illusion which made it seem unaccomplished, an illusion which our finiteness has created ? If this be the case, then, that there should be progressive supersession of error is essential to what is no static attitude, but a dynamic process.

CHAPTER XV

THE HEGELIAN PRINCIPLE

We have seen how the caution of Kant led him to stop before electing which of two further paths he would follow. But his system could not remain as incomplete as he left it. Schopenhauer and Bergson chose a path which led far from where Kant finally stood. For they both entered on the pursuit of what seemed to be analogous to that thing-in-itself the nature of which Kant had declared to be impenetrable for knowledge. But it was not on knowledge that either of them professed to rely as the instrument for penetrating to things-in-themselves. It was on direct awareness. Schopenhauer found this in the immediate sense we have in our own bodies of the reality of will. Bergson found it in a not dissimilar direct awareness of a foundational activity which he calls *durée* or *élan*, or creative activity, but he did not lay the emphasis that the former did on bodily sense of direct intuition.

Over both forms of this post-Kantian development the critics have been active. By whatever name we call direct awareness, or however we describe it, it is insisted that what it yields in the hands of Schopenhauer and Bergson alike is what is obviously in truth knowledge, and much more than any mere passive awareness. From the former we hear a great deal about the inherent character of will, and also about its modes and grades of self-manifestation. By the latter we are told much of scientific detail about the creative activity and how it operates. Of time we learn not merely *that* it is, but a good deal about *what* it is.

The result is that, not only the American criticism to which I have referred, but also criticism in the Old World,

has pressed the view that the attempt to supply the rôle of knowledge by direct awareness has been no more of a success than it has been in the parallel instance of New Realism. Unless we are able to treat knowledge as a mere causal and accidental external relation between entities wholly independent of it, it is difficult to regard it as having been shown in any of these versions to be capable of resolution into something anterior to itself.

Even in the years with which the nineteenth century opened this attempt had been made by others, like Schelling, and had apparently failed. It resulted in the end only in what Hegel grimly characterised as a "night in which all cows look black." There was therefore a desire to probe afresh the ground examined by Kant, and to see whether it was really necessary to attribute to knowledge the limited scope and significance which was all that Kant would permit to it. This desire culminated in the Hegelian system, and about this system it is accordingly desirable to say something here, in the hope that it may prove less misleading than some other statements about its principles.

It is odd that one should have to begin to speak of a philosophy by telling what it *was not*, instead of at once stating what it *was*. But this appears unavoidable in the case of Hegel. For the habit of not taking the trouble necessary, in this instance a good deal of trouble, to proceed to the source and to master his own version, instead of trying to get knowledge of it at second-hand or from isolated citations, has led to extraordinary confusion of ideas. I will begin by stating once for all that Hegel did not suggest that things were created or constructed by our private thoughts about them.

Anyone who wants to verify this statement has only to turn to the criticism of Kant in the account given by Hegel of the "Second Altitude of Thought towards the Objective World," in the early part of the volume on *Logic*, in his *Encyclopædia of the Philosophical Sciences*. His very purpose, a purpose pursued undeviatingly, was to eliminate the element of subjectivity with which idealism had been invested by Kant. Nor did Hegel believe, on the other hand, in any absolute, outside and apart from human knowledge. He did not even, to pass to a very different illustration, set up the Prussian constitution as a final

deliverance of truth. It was merely one among a number of other phenomena which had to be investigated as among existing facts, in their relation to human individuality. About this he says, in the preface to his *Rechtsphilosophie*, that the book is no more than an attempt to conceive of and present the state in the form it has actually assumed as the embodiment of rational knowledge.

"Philosophy has to be on its guard against constructing a state as it ought to be. Philosophy cannot teach the state what it should be, but only how the ethical universe is to be known."

And again, in the *Zusatz* to paragraph 273:

"The principle of the modern world as a whole is freedom of subjectivity, the principle that essential aspects of the spiritual whole should attain their right by self-development. From this standpoint one can hardly raise the idle question as to which form is the better, monarchy or democracy."

Why, then, has he been so much misinterpreted? One reason is that in the hands of lesser men the instrument which he wielded easily was too ponderous for them. After his death his school split up into subordinate groups, which by degrees perished from sheer feebleness. There was an orthodox group of the right, which found a mission in the defence of orthodoxy in religion and politics. With these topics Hegel had professed carefully to refrain from concerning himself, on the ground that they lay outside the limits of his philosophy. There was also a more vigorous school of the left, containing leaders like Strauss, Karl Marx, and Lassalle, which again went far beyond the teaching of its founder. There was in addition a variety of smaller groups of disciples, rivulets in which the main current was frittered away, to disappear in sandy soil.

Another reason was the personality of Hegel himself. He commanded admiration because of his intellectual power, but the love of the general public he never commanded, as Kant did, or as Schiller and even Goethe did in literature. His was a grim figure, and by no means altogether inspiring. Goethe, who had in some ways a

high respect for him, and in whose study at Weimar a bust of Hegel still stood in the days when I last visited it, had a very definite sense of certain defects in Hegel's character.[1] The curious will find these touched on in the published correspondence between Goethe and Zelter which took place at the time of Hegel's death.

Still, detached as in many respects Hegel was about public matters, there is no doubt that while he was a Professor at Berlin he made himself at times more useful than was becoming to the Prussian Government of the day. His attitude was not always admirable. Indeed, his personality does not appear to have been in all respects an attractive one. His strength lay in his tremendous intellectual power, although in his letters there are many indications of a gentler side. He was no recluse. He went into the literary society of Berlin freely. Whether in all respects he possessed "the social gift," or was wholly a success there, is not clear. At least he appears to have liked to meet his fellow human beings. He is said to have played whist, and to have found in it the relaxation which the great Moltke was to find in it later on. He was a good husband and father. He is reported to have himself kept his household accounts, and that rigorously. In these respects he differed from those eminent philosophers who have found metaphysics to consist best with a solitary life unblessed by wife and family. Spinoza, for example, and also Kant sternly preferred the companionship of their own thoughts.

One cannot call his a figure that appeals to the imagination. His power of influencing men lay in a wholly different direction. Perhaps his lack of personal popularity has had something to do with the distorted image of his system that the man in the street seems to have constructed and to have passed on to the present generation. But in any event the last description that would suggest itself to anyone who has really busied himself in trying to get an accurate impression of this extraordinarily powerful figure in the Walhalla of thought is that he was either a mystic or obscure in his apprehension. His knowledge was enormous, both of the literature and of the science available in his time, and he had full command

[1] Goethe disliked the political atmosphere of Berlin. To Hegel it was by no means uncongenial.

of it. For the rest, he appears as a rather hard man, always master of himself, and never expressing emotion unless of deliberate purpose. Few great thinkers have steeled themselves more against deflection by side interests. With Hegel the system is the outcome of an unswerving industry in accumulating material and of adhesion to a single line of thought.

It is a hundred years since he wrote his most important books, and they were written in a phraseology which is ill-suited to the present day. No doubt philosophy has suffered much from looseness in expression and from the introduction of metaphor into its language. But Hegel went further than was required towards the opposite extreme. He devised a terminology which is his own, but, although exact, is of a barbarous kind. He is systematic as only a German can be systematic. At times this feature approaches to pedantry. But if the language is repellent it is careful and replete with meaning. In what he says there is always an approach to scientific precision. Once master his principle and his method of expressing it, and he is never difficult to follow. But then the preliminary discipline to which the reader has to subject himself is severe. For the writing is for the most part as abstract in form as a German can make it, and to say that is to say a good deal.

However, what really makes Hegel so difficult is something not his fault. It is the inherent difficulty of the problem, a problem that is probably in itself more baffling than any other we know of. After all, Plato and Aristotle and Plotinus, who had the same problem to deal with, are really more difficult to follow. Their terminology, if less abstract, is looser and more obscure, and had they written in German their methods of exposition would probably to-day have been reprobated even more than is that of Hegel.

I have already indicated how Kant stopped at a point where the way beyond divided itself, and how Schopenhauer and Bergson have followed one branch of the divided path. Hegel pursued the other. For him Kant's "thing-in-itself" was, as with them, an illusion, but the way towards ultimate reality lay, not in direct awareness or intuition of anything in itself, but in a resolute attempt to discover the character of knowledge freed from the

special relativity with which Kant had invested it. This was the source of Kant's belief in something inaccessible to experience, but which might yet be the basis both of our thought and of the things which it was about. Hegel's alternative plan was to observe knowledge passively in its self-development through its multitudinous forms. Its intrinsic nature was for him to be active or dynamic. The fashion in which he found this dynamic activity displaying itself in the movement of thought he named the *Begriff*. The dialectical quality of conceptions, by which each implied the other and took its place within an intellectual entirety, yielded, as the result of observation of thought and things alike, a self-completing system, called the "Idea." The individual, or universal in concrete form, was the actual, and the actual was always individual. No merely abstract thoughts, no system of universals, taken *per se* could be actual. Nor, on the other hand, could a merely objective world exist dissociated from intelligence, as if self-subsistent independently of it. Such a world would be no more than a mere counter-abstraction, with no factual reality. The true reality was to be found in the concrete experience disclosed in our minds, the factual reality of which could not be questioned. For in mind the universal and the particular, the abstraction and the counter-abstraction, were actual as united in what was individual, and, as these two factors or moments, were constitutive of what was concrete and as such actual. To determine the character of ultimate reality the only way was therefore to observe the disclosure made by the mind of its own nature and its own dialectic. If we did this faithfully we should be able to see in what its human and finite quality consisted, and in what respects the human mind, as appearing in nature and in self-consciousness, imported what was more than finite as its foundation. This problem he worked out in his first great book, *The Phenomenology of Mind*. The result was for him, as in the main for Aristotle, that knowledge was disclosed as being foundational of reality. The next step was, by logical analysis, to distinguish within knowledge its moments, a task which could only be accomplished reflectively and by abstraction from the concrete reality. He set himself to make the requisite analysis in his *Logic*, the first part of his *Encyclo-*

pædia. There he sought to work out the various forms of abstract conception which actual knowledge implies and makes explicit. He also exhibited what he took to be the dialectical or dynamic activity by which each form of conception involves and passes into a negative counterpart, a further abstraction by the incorporation of which it is enriched, with the result that a third conception is always precipitated, in its turn to develop its own nature similarly in virtue of this active character of reflection. The entirety is a system of abstract thought, as naturally inherent in and characteristic of the objects of mind as it is of knowledge regarded from a subjective standpoint. The completed entirety, being no more than a system of universals yielded by abstraction, naturally requires a counter-system with the character of particularity, in order to the attainment of real existence in actual knowledge as we find it in experience. This it has in the counter-abstraction which we call nature, which is just as necessary and foundational as is abstract thought. Neither creates the other, and both are real only in their union in experience and in mind, which carries us beyond what is usually meant by experience. For it is experience that constitutes the basic reality from which the start is made, and which all reflection presupposes. Thought does not make things any more than things make thought. Idealism and realism, as hard and fast principles, are alike beside the point.

Hegel goes on, after displaying Logic, Nature, and Mind Actual, in the three volumes of his *Encyclopædia*, to apply his doctrine. It imports, as implied by its character, a system of scale of degrees, both in knowledge and in objective existence, corresponding to the standpoints to which the self-evolving character of reflection gives rise. The application by him of this principle takes the form of a treatment in detail, in accordance with his ground conception of reality, of various branches of human knowledge, as we find them, for example, in Ethics and the theory of the State, in Æsthetics, in Religion, and in History. As regards the last, we owe to him, probably more than to any other, the modern historical method. His task he accomplishes in a series of volumes with an impressive command of material. He was a tremendous student, equipped by long years of patient research in

almost every department, and thorough in his work to the last degree. It is his critical outlook in these regions, based on a coherent principle, that has been the source of much of his influence in philosophy, and that has continued to exercise a great influence even in our own times. For there are few, if any, out-and-out Hegelians left. The attempt he made to exhibit the entire universe in systematic form has been adjudged too ambitious. Even in recent British philosophy, such as that of Green, Bradley, and Bosanquet, it is the spirit and not the letter of Hegelianism that is apparent. But his influence, indirect as well as direct, has been enormous, and it is in both this country and America, and now also in India, apparent to-day as much more alive than it has been in Germany for fifty years past.

The Germans are fond of saying that they have made more out of Shakespeare than we in Britain have. This saying may or may not have some colour of truth. But it is probably still more true that we have made more out of Hegel than they have.

I shall not try to describe even briefly what Hegel taught the world in Hegel's language. What I wish to do is to inquire what is the point of view in which his teaching has culminated. To this I proceed. For not only is he still well worth study even to-day, but those who have not studied him hard and wrestled with his text are scarcely fully equipped for the investigation which a modern philosophical critic has to undertake. I often observe in otherwise able writers easy conclusions about him, based on materials supplied by middlemen. Yet no such source of supply will do. The fountain-head must be sought. Modern Germany has in the main forgotten him, and into modern Britain and America and India his real lesson, like the lesson taught by Aristotle whom he brought back to life for us, has only of late years penetrated. Even to-day some of his most interesting criticisms, such as those in the *Zusätze* of the *Philosophy of Mind*, which were omitted by the late Professor Wallace in his admirable translation of the book, are accessible only in the original text.

As I interpret him, he broke definitely and finally with Kant's attempt to treat knowledge as an instrument which we can hold out and look at as something capable of being critically dissected *ab extra* into constituent parts.

For Hegel knowledge in its comprehensive meaning was the foundation and source of all that was, is, and can be, the medium of all possible existence, culminating at its highest degree in the exhibition of the distinction between the self and its object as superseded. It is for him within and through knowledge that this and every other distinction is made, whether between real and unreal, or fact and fancy, or being and knowing. For him the Absolute was knowledge taken in the wide sense in which it presents the aspects both of experience and of what is experienced, according as we approach it in reflection. Reality is an experience that embraces what is felt and willed not less than what is thought. Knowledge is our fundamental fact, the "That" from which we start and outside which we cannot get. Mere feeling and mere thought are only asymptotic limits which we set before ourselves in our attempts to unravel our experience. If we marshal its riches adequately it will unravel itself before us. For its form is to be not only individual but dynamic. Universal and particular unite in the individual reality as its moments. This is so because the form contains thought as much as feeling, and is continuously self-developing and not static, the activity of subject and not of substance. The individual is always breaking out beyond itself into the infinity of its relations. There are thoughts and therefore universals which we fix for the moment in judgments of understanding. We believe that we can put them into nutshells, and we try. But, in language which the late Lord Macnaghten used about the "Rule in Shelley's Case," it is one thing to put these ideas into a nutshell and quite another to keep them there. The ideal of truth is the whole, and knowledge is always reaching beyond itself after a larger entirety which abstract thinking is constantly forced to seek as qualifying the apparently static "That." For from the "That" the "What" is never severable, nor does it itself ever stand still. In the phases of experience of which Hegel speaks the universal is nothing apart from the particular, and the particular as such, taken by itself, is equally unreal. Both, as I have said earlier, are abstractions. The only actual is the individual fact from which they are abstractions non-existent in independence. The essence of such an actual is that identity in difference which

is intelligible only when mind has an object in which its own character is expressed. So alone can the whole be latent in its completeness in every detail. Because its essence is to embody such a whole the individual is always breaking out, in the intellectual setting outside which it has no significance whatever, in the activity from which it is inseparable, into relations, into predicates, into universals, which have yet no substance apart from the facts they qualify, facts which appear as particular only for the abstraction through which our apprehension strips and isolates its work. Thought is relational, but for Hegel it is more than relational. It is always transcending this phase by seeking for further wholes in which the relations it establishes are included and superseded. Such is the movement of experience. It is our experience, yet we, found in it as finite, are only so found by distinctions which thought makes within the field of its own reality. As in its activity the moment of the subject comes into prominence, we are carried by reflection beyond the idea of self as only a sentient and intelligent organism existing within a world which controls as well as confronts it. It is so that we have experience at its degrees in the order of reality, and it is only through reflection that we become aware that such experience points beyond itself to the conception of an entirety in which subject and the object in knowledge cease to appear divergent, a self-contained system outside which there is nothing, inasmuch as there is and can be no meaning to be attached to existence outside or beyond it. Such an idea we who exist in point of fact as finite centres, conditioned by our station in the world, cannot visualise. It cannot be yielded by the particulars of sensation. It is intelligible only mediately and for reflection, not by direct apprehension. Nevertheless it is the truth about the object-world, and is that in reference to which such a world alone has a meaning. This is the Hegelian *Begriff* or "Notion," and its completion, when its full implication in the entire system of its activity is before us, is the Hegelian system.

Now, how does Hegel get at this result? What is his method? To understand this we have again to turn to his first great work, the account of his "voyage of discovery," published in 1807, under the title of the *Phenomenology of Mind*. The book was finished, in the

autumn of 1806, amid the rattling of sabres. Napoleon entered the little university town of Jena while Hegel was putting his last touches to his work. "I have seen the World Spirit," writes Hegel characteristically to a friend: "it was on horseback."

It is the world spirit, in a wider meaning than the domination of Europe by any one man, that Hegel set himself to consider in his *Phenomenology*; it is the penetration of experience by thought. He starts from what seems simplest and least mediated by reflection, and assumes the rôle of a passive observer who watches the work of reflection, playing not only on what is externally apprehended, but on what is of its own nature. I notice that it is *now* noon, and I write it down. But no sooner have I done so than this immediate truth has ceased to be immediate. It belongs to the past. It was *then* noon. *Now* it is a quarter past noon. "*Now*," which appeared to be given to me as an inert and particular character in perception, turns out, as soon as I try to fix it, to have been fashioned through an active if abstract universal, real only in a succession of singular or individual occurrences. It is the same throughout with the "Here" and the "Now"; the "This" and the "That"; the "I" and the "You." It is as universals that they have meaning and remain enduring in a succession of singulars, the nature of which is always to be developing new relations for itself. This is why scientific truth is always abstract. The self-developing character of the immediately real never stands still, for what is immediate derives its stability and permanent significance from the thought in which it sets itself. Goethe knew this when he wrote the lines in which, in the Prologue to *Faust*, he makes it a command from God to man to strive to hold fast the best in life by setting it in thought that endures.

The penetration of mind into reality is everywhere apparent. Mind is not a thing merely confronted by another thing, its environment. It is an activity, a power that at every point makes that environment what it is for us and what it is in itself. It contains within itself the environment, as well as the centre for the reflection in which its objects are focussed; finds itself as what makes these objects real; and establishes the distinction between itself and them. As I look out on the country that lies

in front of the window at which I am at this particular moment writing, I see that great truth everywhere exemplified. Relativity is the order of the day. If there is matter which seems inert it is only because for practical purposes I regard it as such. The corn grows up as if purposively realising an end, by transforming the soil and moisture about it and making them parts of a living vegetation. Life is everywhere, and the more I look closely at what seems to be its environment, the more I find that environment to have its meaning only in relation to life. If I regard it otherwise, as the mathematician, the physicist, and the chemist must do, it is in order to isolate and fix aspects gotten by abstractions which do not exhaust its reality; in other words, to get knowledge belonging to different orders in reflection, and affording degrees in that reality. The stages in the panorama which unrolls itself in front of me, the self-presentation of the hills, of the river, of the trees, and of the men and women who are working in the fields, none of these disclose a single or exclusive degree of reality. All are present as aspects that are not separate existences, but are the outcome of different standpoints that imply each other in the entirety which underlies my experience of each taken as singular. The rocks are worn down by the water, and are required to furnish the material which life incorporates and exhibits at a new stage for reflection. The basic slag, which is the refuse from the ironworks, serves the life that incorporates it into organic existence as a valuable manure. The farmer and the farm servants respect each other as personalities, brought into unison in their labours by the common purposes of the conscious intelligence which assigns to them their places in a kingdom of ends. Everywhere nature shows aspects which are degrees in relationship only in a known that has no significance separable from its being known. As Aristotle long ago pointed out, the antithesis between matter and form is a fluent one. What is in one reference matter is in another reference form. Wood, he told us, in relation to the finished house is matter; in relation to the growing tree in which it is alive, it is form. So the soul in relation to the body is form, in relation to reason it is matter. The Aristotelian conception was that the totality of existence constituted a graduated scale, of

which the lowest degree was a "first matter" entirely without form, and the highest a "last form" entirely without matter. What finds itself between these limits is in one aspect matter, in another form, and each is constantly translating itself into the other in a process of what for the great thinker was a process of becoming, through higher and ideal formations in reflection.

The Hegelian conception of experience in the *Phenomenology* is not different in principle. For Hegel, too, relations which are only intelligible as being akin to those of thought are constantly breaking through the abstractness of a supposed mutual externality, and disclose the real as a series of stages in quality. The series does not appear as one of mere succession in time, for time from the psychological point of view is itself but a form of abstract externality. Still, apart from series in some shape, and from notions which it implies, the riches of the world as it appears are inexplicable and unmeaning. Substance and cause are notions that pass over into each other in reflection. The effect is in one view identical with the sum of the conditions that constitute its ground. In another view the distinction between the cause and what follows on it is vital and cannot be ignored, inasmuch as adequacy of thought requires it. Thought, conceived as giving rise in its activity to the standpoints from which it treats reality in the experience that is its object, is for Hegel the ground fact of the Universe, and it is the play of thought in its self-development that is the spectacle he seeks to unfold in the *Phenomenology*, alike in the world and in the self.

The ground forms of such foundational thinking, taken in their relation to each other as a self-completing series of abstract categories which culminate in an entirety, is, as I have observed earlier, the subject of Hegel's *Logic*. It is thus a metaphysic which deals only with conceptions got by abstraction from the actual. The advantage of so treating them is that their significance can be ascertained, and a dialectical movement of thought can be exhibited in which the relational form, into which the sharp distinctions made by understanding throw our judgments, is superseded by being made subservient to the end that takes shape in the entirety of the process. This entirety

is the "Idea," and his *Logic* exhibits it in a form in which it and its contents are not more than mere abstractions. The counter-abstraction to its character as a kingdom of universals is described in his *Philosophy of Nature*, where externality in space and time, the primary characteristic of particularity, appears as reality under another aspect, which cannot stand by itself, or even be stated in the form of mere particulars. The abstractions of the *Logic* and the counter-abstractions of the *Philosophy of Nature*, have meaning and reality only as the universal and particular moments which are implied in our experience and in the individual form which distinguishes it. Neither set is created by or can be deduced from the other. Such abstractions have existence merely from a metaphysical outlook, and attain to factual reality only in the mind in which they combine. But because it implies, not merely pure thought, but the natural aspect also, mind, which is thus inseparable from the particular, from one point of view arises through nature. It is, therefore, at its lower degrees of actuality, finite. But it is also presupposed by nature which attains reality only in it. Mind can thus exhibit an ascending order of degrees, and accordingly it presents aspects, depending on these in their order and character, as belonging to self-consciousness, not only in the individual, but in the family, the state, and the embodiments of intelligence in ethical and juridical systems. The Prussian constitution, as I have said, was, for Hegel, a fact of experience to be investigated in its place just like any other. Its position in the panorama of the world's history and the logical significance of its structure had to be examined. But beyond this Prussian state and beyond every other were the ideals and degrees in reality realised in spiritual life, in Art, in Religion, and in the knowledge that has so emancipated itself from limited ends and consequent undue abstractions that it can take account of the object-world as in ultimate analysis that in which mind finds itself and nothing outside or beyond itself.

It is just mind, taken at the highest stage it reaches through Art, through Religion, through Philosophy, that finds God as immanent in it, and experience rightly interpreted to be the real revealing itself. A direct and immediate apprehension of the full truth is not possible for an intelligence that is throughout hampered by the

moment of the particular, and is bound up with bodily organs and with nature itself. We are in the world though not of it, and we cannot escape from the external and the contingent. The particularity of the very self opens the door for error and for sin. For, as we have seen, if nature has its foundation in mind, mind has its finite aspects through nature. That is how the irrational and contingent arises and confuses mankind, and that is why the reflective consciousness has a long path to travel towards its emancipation from the deadening mass of what confronts it. But as we comprehend we transcend, and thought, even when conditioned by an inseparable sense of finiteness, is in its nature infinite. By the use of concepts which, though always abstract may be not the less true, by the power of reason, it can thus reach conclusions about God as well as about man. For the difficulties and the mysteries have their fountain and origin in a limitation which it is aware of and, just for that reason, is ever passing beyond.

Such, as I understand it, is the underlying principle of the Hegelian view of the relation of the cosmos to the completed entirety of knowledge, the Idea realising itself in mind with the combination of general and particular moments in its activity. The factors in that activity are the abstractions of universal and particular. The actual is always concrete and is self-developing experience. It is a view not far divergent from that of Aristotle, whose teaching had influenced it profoundly. It may be too ambitious. It may be impossible for thought, conditioned by nature as it is, to penetrate as far as Hegel attempted to penetrate in his system. But at least the attempt stands out like that of the great Greek, whom Dante calls " the Master of those who know," as belonging to the highest level in the history of human effort in knowledge. We may hesitate before accepting the Hegelian conclusions, as we hesitate to-day to accept what was told us by Aristotle. But in each case the method employed is of a great order, and it is the method that is of most importance. The reader lays down both expositions stimulated in his faith in the value of a sustained effort to see things steadily and to see them whole from an outlook that admits no limitation to the " wonderful might of thought." If thought can penetrate at all into

the millstone that is inevitably there for finite minds that are organically conditioned, Aristotle and Hegel have got some way in enabling us at least to see into the general nature of the millstone.

I have now tried to say what can be said about the Hegelian principle in the compass of a few pages. I have confined myself purposely to its bearing on the doctrine of relativity in knowledge, a bearing which appears very close. I conclude this chapter by repeating that no philosophical doctrine has been more misrepresented or given to the world in a more distorted form than has been Hegelianism in current literature. It is only now that we are beginning to understand what Hegel really meant to do. This has been partly due to the abstract and almost pedantic way in which he has expounded his own thoughts. But the thoughts are all set out in his writings. It is his apparently too ambitious manner of exposition, and also the rubbish with which many of his disciples and commentators proceeded to overlay his system, which have disguised from us his real meaning. But the lesson he taught has already been assimilated by many. It took over two thousand years for us moderns to think ourselves back into the real significance of the teaching of Plato and Aristotle. It seems, however, as if less time would be really required to penetrate through the crust with which the Hegelian principle has got overlaid.

PART IV

THE INDIVIDUAL AND HIS ENVIRONMENT

CHAPTER XVI

THE RELATION OF MAN TO SOCIETY

Up to this stage what we have been concerned with has been primarily the theoretical aspect of knowledge. But knowledge is more than merely theoretical. It not only issues in action, but it *is* action. It does not leave its world as it finds it. As the principle of relativity shows, it shapes appearance and reality alike in nature. It is the fact that both of these stand to it in a relationship which is in a measure dependent even on the organic life in which knowledge expresses itself. Colours, for example, may vary in the perceptions of different individuals. Knowledge is, however, not the less spontaneous and self-determining, and so are the external forms which it assumes in natural and social life.

Just as we are free in what we call theoretical knowledge, so are we free in the kind of knowledge which assumes the form of choice. We can select on our own initiative. And just as what we know theoretically is independent of the individual subject, in so far as both arise within knowledge and have it, in its foundational character, as their common basis, so it is with value and the choice of value. Values are in their essence independent of the individual subject who selects them, inasmuch as if they did not owe their significance and reality to something else than his arbitrary selection there would be no objective world of the good and the beautiful, any more than there would be of the true. *When* we know *what* we know is an actual and real world that is independent of our subjectivity, in so far as that subjectivity is but a derivative result, the distinction between which and its object-world is a distinction which falls within the foundational character of mind itself, as resulting from it. If we approve of some end or of some possible action as

right or as beautiful, we recognise it as not dependent for being so on an arbitrary choice. It is so and cannot, the conditions remaining unchanged, be otherwise. Here, as in the other cases, we find degrees and differences of level in knowledge and reality.

The fact is only another illustration of the principle that the individual is always more than at first sight he seems to be. Whether it is the individual as the active subject in knowledge, or the individual object of that knowledge, what becomes apparent is that we are dealing with neither a fleeting particular nor a merely static universal. It is the universal that is active in individual form, and is therefore always dynamic as pointing beyond itself. The universal moment gives the identity which is not the less identity that is real only in difference and constant change. The static aspect of the actual is due to the abstraction which hypostatises the universal moment into what is unreal, save for the legitimate purpose for which abstraction is applied in clarifying and communicating knowledge.

Value in its ethical and æsthetic sense is thus the outcome of the root principle of degrees. We cannot challenge the ultimate standards of such value or express them in terms of what is lower. Just as the organism is no mere aggregate of isolated particles, so the good and the beautiful are no mere preponderances of atomic pleasures. Hedonism has always failed as an adequate expression of the facts. It is only in the terms that are peculiar to themselves that we can even speak properly of the good and the beautiful. They are what they are because they stand for independent stages in mind. If the phenomenal world in which they are illustrated and expressed is but transitory, they themselves, as principles, on which even its changing aspects depend for their reality in time, are not transitory. For they are the conditions apart from which what appears in time cannot so appear.

We have seen how mechanism, life, and personality present themselves as belonging to different levels in the real world, levels of which the explanation cannot be found by trying to construct what is higher out of what is lower, but must be looked for rather in abstractions made from above downwards from a yet fuller reality.

To the region of personality belong the phenomena of the degrees of goodness and beauty. It is the will that is good. It is for the mind, and for the mind only, that beauty is born and is there. Goodness and beauty are what have been called tertiary qualities, but they are as much aspects of actual fact as mechanism or life. The emphasis is here on what is personal, the relation of the free subject to the object-world of which in certain aspects it forms part. But neither that world nor the mind which it confronts is capable of being adequately described apart from the recognition of these aspects as integral to the entirety.

If we begin with the good, the first thing that strikes us is that the region in which we have to seek it is that of the free person. He can choose, and in certain phases of his choice it is an individual and inward standard which appeals to him, a standard set up by his conscience. He knows the difference between right and wrong, and his inmost self bids him choose what is right. He stands before a tribunal, and the tribunal is his own self, his self at a higher level than that at which it pursues the merely pleasant. Just as in man knowledge is the medium within which the individual self develops and expresses itself, so it is with the individual will. The form here is that of choice, active preference, a process, not a mere isolated event in time. And the reality of this activity cannot be understood apart from a higher degree in that reality than the isolated and fragmentary volition of the individual, looked at in his aspect of one organism among a numerical multitude. In all of these, just as there is identity in their thinking, so there is identity in their ends in volition.

In the next chapter we shall have to examine the possibility of what is called a general will, and to see what are the limits of the conception and what it actually means. At present it is sufficient to suggest that it may prove to be the individual mind in its larger significance, as dominated by ends that in other individuals are identical with its own. This may afford explanation, not only of morality strictly so called, but of much besides to which we shall come presently.

What we call conscience is this sense of ends of higher value and obligation than any that are concerned with

merely personal interests. Conscience is what, when his sense of it is fully awakened, man recognises as his private tribunal, his own court for decision between values. But it is private only in so far as its scope is the life of the particular man, not the less that he is more than a mere isolated individual. The sanction is subjective, and it is binding on himself as an individual subject. He has in this region no right to force his decision as regards himself in the same fashion on his neighbours, however certain he may feel about that decision in his own case. The very loftiness of the motive which makes a man think more of the interests of his neighbour than of himself, or that bids him sell his goods and give the price to the poor in obedience to an inward call, renders that motive in the highest cases incapable of being made a rule of universal application in any positive form. To make it so would be to trench on the freedom of other persons to seek and follow the dictates of their own consciences. That was why Kant's attempt failed, the attempt to lay down as the canon for all conduct that it should conform to an obligation to act at all times from maxims fit to be universal rules. When this was worked out in relation to human society it appeared that such maxims could be no more than merely negative, and must prove inadequate as guides to daily life.

Morality, properly so called, is not enough for citizenship. Society requires binding rules of a positive character, and institutions by means of which these can be made effective. Such rules must restrain effectively arbitrariness in individual conduct, in the interests of the community. Without them others could not have freedom to live their lives. But such rules are, as we shall see later on, simply the embodiment or expression in objective form of the common purposes of mankind living in the groups in which it is distributed. Law, properly so called, whether civil or criminal, consists of certain regulations for conduct which have been laid down publicly, either directly or in virtue of delegated authority, by the sovereign power of the state. There has been such a delegation even when a railway company, acting with statutory authority conferred on it, makes bye-laws, for these derive their binding character in reality from the government of the state, and while unrevoked are laws as binding as Acts of Parliament.

But law is more than a mere command. It is this indeed, but it has a significance which cannot be understood apart from the history and spirit of the nation whose law it is. Larger conceptions than those of the mere lawyer are required for the appreciation of that significance, conceptions which belong to the past, and which fall within the province of the moralist and the sociologist. Without these we are sometimes unable to determine what is and what is not part of the law. Anyone familiar with the proceedings of law courts knows how often the historical method has to be applied, in ascertaining, for example, the principles which decide the invalidity of contracts as offending against public policy. In England considerations may have to be taken into account differing from those which would obtain in a like case on the Continent. The laws contain general rules of conduct, expressed in objective form, and enforced by sanctions applied by the state. But they are not always to be found expressed in definite and unchanging form, and the tribunal which enforces them often has to consider a context of a far-reaching character, a context which may have varied from generation to generation, and which may render even a written rule obsolete, or make it necessary to apply one that is unwritten and about which ethical judgments are at variance. There is also a large class of cases which come within the law, but which the judges feel themselves unable to decide. When the question is whether a van has been driven negligently, or whether a contract for carriage has been made with sufficiently clear notice given that the contractor has only undertaken to convey on certain terms, the terms, for instance, that he is to be exempt from the liability that would be implied had be been silent, the question whether in such cases the course that has actually been followed was proper and sufficient may turn on no general principle of law strictly so called. It may depend, not on abstract rules which cannot take account of all the particular considerations that ought to be weighed, but on what reasonable men of the world would say that their fellowman ought in the individual situation to have done. In other words, the judges confine themselves to defining the question and to saying what is admissible as evidence on its merits, and leave the decision of what is to be regarded

as legally right or wrong in the particular case to a jury, or, it may even be, to themselves as mere judges of fact. For what has to be determined here is just how a reasonable person, acting as other reasonable men would do, ought to have conducted himself.

In these, as in other instances, the province of law overlaps part of the province of a different kind of obligation which usually has no legal sanction at all, and may also fall far short of the obligations of conscience. In this latter province, a far more extensive one, we find a system, coloured by community tradition, in which also individual conduct is regulated and controlled. But such control has in most cases no legal sanction attaching to it, notwithstanding that it applies, just as law ought to do, to all the members of society alike without distinction of person. We have never had in the English language a distinctive name for it, and this has been unfortunate because of confusion both in thought and expression which has arisen from defective terminology. In German the system to which I am referring has been marked off as that of *Sittlichkeit*. This is the system of habitual or customary conduct, which may overlap the field of much of what is covered by morality, as well as of much of what falls within law, and which embraces all these rules for conduct on the part of members of a community which general opinion asserts that it is "bad form" or "not the thing" to disregard. The general sense attaches to these rules a sanction to this extent, that the man who disregards them is in peril of being "cut," or at least of being looked on askance. The system is so generally accepted and enforced by opinion that no one can venture to ignore it without in some way suffering at the hands of his neighbours. If a man maltreats his wife and children, or habitually inconveniences his fellow-citizens in the public streets, he is pretty sure to find himself the worse off in the end, even if he has not broken any law. It not only does not pay in the end to do such things, but the decent man does not wish to do them. What he looks to is the standard of the community of which he is a member. He has everywhere around him an object-lesson in the conduct of respectable people in the community to which he and they belong. Without habitual self-restraint on the part of the natural man, that is the

man as tending to yield to animal impulses, there could be no tolerable social life, and real freedom for human society could not be enjoyed.

It is this sense of obligation towards others, not merely subjective, like that of conscience, and not external, like that of law, that is the chief foundation of freedom within a civilised community, and also of the institutional forms of such a community. The reality of the system takes shape in family life and in other social institutions. It is not limited to particular forms, and it is capable of manifesting itself in fresh aspects and of developing and changing old ones. The civil community is more than a mere political fabric. It includes all the social institutions in and by which individual life and development are influenced, such as are the family, the school, the church, the local assembly. It extends its moulding influence to the legislature and to the executive. None of these can subsist adequately in isolation from the others. They embody different kinds of general purpose, and are expressions in varying forms of that purpose in such a fashion that society appears as an organic whole which includes the nation and may extend beyond it.

But if these purposes are to be effectively expressed they must themselves be living and effective in their moving power. For if they become feeble the institutions of which they are the foundation will also become feeble and begin to lose cohesion. Different nations excel in their *Sittlichkeit* in different fashions. The spirit of a great community and its ideals may vary from those of other communities. Moreover, nations sometimes present the spectacle of having degenerated in this respect. The world is always changing, and the nations within it change their levels, and not invariably for the better.

That the system of what is " good form " or " the thing to do " is not coincident with the systems of morality and law, is on occasions quite apparent. The duel has been generally condemned in this country both by morality and by law. Yet to shrink from it used not very long since to be what social opinion could not tolerate. That has changed. But more recently, while the war spirit was at its height, we had opportunities of observing the same phenomenon of antinomies arising between conscientious conviction and social opinion. Some-

thing of the same kind is true of gambling and gambling debts.

What is essential for the strength of such a system of social opinion is that it should have become a matter of habit and of second nature. The well-behaved person does not ordinarily have to reflect on how he ought to behave himself. Good form, in the street or in the parlour, is with him almost instinctive, and he is the more appreciated the more this is characteristic of him. For his action is neither due to the reflective but unconstrained dictates of his conscience on the one hand, nor to his knowledge of the statute book, with the penalties it prescribes, on the other. The explanation of his fitness to be a member of society is that he is no isolated particle, but a person living in relation to his fellow human beings, and permeated by ends held in common with them, by which, however little consciously, his conduct is influenced at every turn. It is by the fulness of the life of the whole as shown in his activity that he is judged, and his individuality becomes larger and not smaller by his acceptance of the duties he owes to those around him.

The self is thus no static substance, but is dynamic subject. The activity of such a subject has a diversity of forms. It is reflective, in the face of the world which confronts it and in which it exists. But it is also a moulding force with power over its surroundings. This power it exercises when it wills and acts in furtherance of its choice in so willing. The power may be great or may be small. But it is a power which is to a very great extent exercised for ends and through means to these ends which are identical for all the individual subjects who constitute the group or the community. For the self, as we have seen, is what it is in the region and at a level of knowledge which is identical throughout its differences in diverse individuals. The ends are therefore in like manner, not mere events existing in externality and only resembling each other, but the same for mind in its multitudinous forms of self-expression. Organisms exist separately in space and time. But these, even though unconscious, are self-directed in the fulfilment of ends that are not external, and much more clearly is this the case with what we distinguish as separate intelligences in the

organisms through which they are expressed. The soul that has reached the level of being a self is self-determining. Its energy is of a nature to which the principle of conservation that rules in the mechanical world has no application. Mind as we observe it in the self initiates, and in initiating creates, as Bergson and others have impressed on us. The self is not only capable of free choice, but, because it is rational, it chooses some ends in preference to others. It chooses these because it has latent in it higher standpoints of its own existence, at which these ends represent for it good as distinguished from evil, and beauty as distinguished from ugliness. The differences in such levels are apparent, and, while we are free to choose, we feel ourselves morally and æsthetically impelled to choose what is better. Difference expresses itself in the form of distinction between values, and these values are for us radical facts. When perceived we cannot ignore them without standing self-condemned, condemned that is to say by our higher nature, a nature which we feel an obligation to awaken and to keep awake. It is in this sense that these values are foundational, just as truth is foundational in theoretical reflection. Behind them we do not go. We may misconceive and distort them, just as we may fall into error in reasoning. It is of our nature so to do, for we are free agents and unconstrained. But back to them we come, just as we always in the end seek for deliverance from error and for the attainment of truth. We have a sense of moral and æsthetic responsibility, just as we have the sense of intellectual responsibility. The two are cognate, and their origin is the fact that even in daily life the self has a higher level than that of simple particularism.

Just as we find the nature of truth to lie in systematic as distinguished from merely fragmentary apprehension, so we find value to be more than particular in its character. The individual shapes that it presents have as their distinguishing quality identity in their differences. Value implies choice, and choice in fulfilment of a consciously adopted purpose. It therefore implies personality, and is no attribute that can belong to things taken in abstraction from the subject to which they are present. Value falls within the domain of mind as such. But within this domain there is an infinite variety in the nature of

value. For instance, it may lie in the quality of a pleasure, or it may consist in the accepted and satisfying excellence of a moral action. But in neither case is the value recognised referred for its standard to anything below itself. The failure of hedonism as an account of the facts is traceable to its insistence on reference to a lower standard, *quantity* of satisfaction as the explanation of level. Now level, or the degree which a special experience expresses, is not something external to degrees that are either lower or higher, so as to be capable of explanation by genesis *ab extra*. It is a foundational fact, the relation to which of the mind that is fully developed is recognised by that mind. A dog does not make this recognition in adequate form because his mind is not adequate to human experience. A depraved person may not make it, for his organic character may have debarred his soul from full development. But a normal human being recognises value just as he recognises truth or any other form of reality. He may err, for he is free. He may not have it in him to appreciate the highest forms. That is because he is always to some extent conditioned by nature and made unequal in the possession of her gifts to his more fortunate fellow-men. But to a large extent he is capable of truth here as elsewhere, and if he were not he would not be a normal human being.

Just because of the difference between the capacities of individuals there is always an average level which their groups exhibit. It is this average level that results in the standards of daily life. It determines what we look for in quality of conscience, in the state of the law, and in the habitual behaviour which does not fall below good form in the group. The principles or rules which express the average and minimum level at which the citizen is expected to comport himself do not possess in themselves fixed values. They may vary as the groups of individuals vary. But they are the expressions in general or objective form of what the relevant values mean within the group. They may import something resembling ethical obligation or æsthetic standard. In any case they stand for what we think ought to move the will of the individuals who belong to the group, be it a nation or be it less. They import, too, a relation to the existence of the value in objective form. Not, it may well be, as anything external, even in

the way in which law may be said to be external, but as something actual in a high aspect of individual life, an aspect in which the free choice of the individual will be what is characterised by value. The activity of mind is here no mere recognition of logical or of external sequence; it is a judgment about reality made for practical purposes, and with reference to what exists. It is not concerned with what belongs merely to the particularism of the physical organism in which mind expresses itself in this man or that. It is with what is of a general nature and with identities in human purpose that this kind of mental activity is concerned. It is choice in accordance with a system, and such a system, in its varying forms, is the standard by which we condemn or approve our choice in particular instances. The value of man as a rational being thus turns, not on external causation, not on his impulses as a living organism, but on his capacity to rise above these impulses in controlling himself, and to become a citizen in a realm of higher ends. His will is that for the exercise of which he is deeply responsible, not only as regards others, but to himself as always more than he seems at the moment to be. The world of his experience is not static; he and his surroundings may both be changing; what exists is ever in process of becoming superseded. And yet there is continuity in the great principles on which depends the value of human ends, alike in merely theoretical knowledge and in that practical form of knowledge which is called choice. The two kinds of knowledge not being really different the truth for both is of the same character, and is what for us finite beings at all events is never perfect. All we can be sure of is that there are certain aspects which it presents that are foundational to progress and ought therefore never to be ignored. It is thus that values are for us not only objective, but in certain phases unquestionable. What ought to be and what is tend to come together.

The perplexity that is common about the reality of values arises from the old notion that the mind is a kind of thing that is confronted by some external authority in its choice of standards. But if the mind has its definitive nature as subject rather than substance, and in its self-creating activity exists with different levels of outlook, the control in the selection of its objects and in its

recognition of their quality is one that belongs to itself and falls within its own nature. Whatever the character of our experience, whether it be theoretical or ethical or æsthetic, it seems everywhere to disclose as actual varying degrees in that character and in our kinds of knowledge. According to the level which predominates we classify the people with whom we come into contact. They do not exist in any one form alone, and the worst of them is potentially better than he seems to be. They exhibit many incongruities in both mind and character. But we classify them according to what seems to predominate, often wrongly, from want of variety and scope in our own outlook, but still with definite standards before our minds. One set of persons in the main pursues pleasure of a lower order; another that of a higher nature. There are those who are the creatures of their surroundings; there are others who live lives that are dedicated to high callings. Some are for the most part content to remain under the shadow of self; there are others whose very existence is an apparently unbroken record of decisions that have no reference to their private interests. And so it is also with relative capacity for the appreciation of the beautiful and the true. In the main we classify through the kind of conception that seems to dominate the end pursued, just as we classify the kinds of knowledge by the conceptions under which it proceeds in the investigation of reality. The ends which obtain in choice and the abstractions necessarily made in reflection are alike those of a plurality of orders which can neither be reduced to orders below them nor be treated as indistinguishable without confusion being the result. The difference between Portia and Sir John Falstaff is one not of quantity but of quality, and it is a difference that rests on principles that are foundational to ethical judgment.

It is difficult to make this kind of abstract statement about such difference in point of principles seem alive when it is expressed in merely theoretical terms. It may therefore be worth while to turn to an example of its embodiment in that "most perfect form of speech," poetry. Of such examples there are many, but one of the best is that afforded by the second part of *Faust*.

Goethe disliked philosophy *eo nomine*. Yet that great critic of life and knowledge had a penetrating insight into

the substance of metaphysics. He had not only studied Spinoza and, to some extent, Kant, but he was intimate with Schiller, whose interest in these things was keen, and, as readers of his correspondence with Zelter know, he had seen much of Hegel.

As I have already pointed out by reference to the passage quoted at p. 227 from the *Sprüche in Prosa*, Goethe had grasped the difference which separates the categories of mechanism from the higher categories, and distorts, when we do not keep this difference in kind before the mind, our observation of facts. And he also understood the soul that is conscious of high potentialities in range and destiny, the soul of man at his best, and that nothing enduring or satisfying can be hoped for from merely piling up quantities of pleasure. That is why the Deity, in the "Prologue in Heaven" at the beginning of the first part of the poem, tells Mephistopheles, in the first place, that He, the Lord, attaches a certain value to the ceaseless activity of the devil, in so far as it keeps man, always prone to err, from relapsing into slumber. But He then goes on, after warning the devil that he is too ignorant of higher things to succeed in the end, to address to humanity, the true child of God, the injunction that in enjoying the riches of life it must never cease in the endeavour to hold these riches in bonds of love, and to set the transient nature of what is passing in thoughts that belong to the eternal.

The first part of the story of Faust is, as we might expect from this, the record of a complete failure on the part of Mephistopheles. To the high-trained scholar, restored to his youth, but still a developed soul, he offers pleasure piled upon pleasure, culminating in the seduction of the innocent Gretchen. It is all in vain. There is no point at which Faust can be brought to say to the moment, "Stay, thou art fair." Sensual enjoyment cannot prove for such a soul an enduring good. Faust is disgusted with it.

The second part of the poem opens with the temptation spread in more subtle forms. Faust, who is found sleeping in the surroundings of beautiful nature, where he has been sprinkled by the spirits with the waters of forgetfulness, is awakened to new adventures. He enters into the life of Courts, and becomes powerful and wealthy. His intelli-

gence demands something more perfect than the forms of art in his own period. He is transported to the surroundings of Ancient Greece, and is united to Helen of Troy. Greek beauty is made to come to life again for him. But this has been accomplished only for his own individual development, and for that alone he has sought it. Such concentration on self cannot satisfy. There are higher standards. He is rich and powerful, if now old. He can command what he pleases. The devil suggests to him that he should build a castle and live there, surrounded with every source of enjoyment, looked up to by all men, and made famous by the poets. But the suggestion fails. Faust replies :

" Die That ist alles,
Nichts der Ruhm,
. . . .
Von Allem ist dir Nichts gewährt
Was weisst du, was der Mensch begehrt,
Dein widrig Wesen, bitter, scharf,
Was weiss es, was der Mensch bedarf."

Finally Faust comes to a decision. He has formed a plan of shutting out the sea from land of his which it is overflowing, and so of increasing the extent of ground that can be cultivated. But in getting this done, through no evil intention of his own he turns out to have inflicted cruel suffering on innocent people. He is now old. Care breathes on him and blinds him, and he realises that in this blindness he is submitting to what is some equivalent for the pain he has caused. He feels that it is now for others that he must use his power and riches, and no longer for himself, and relief comes to his soul :

" Die Nacht scheint tiefer tief hereinzudringen
Allein im Innern leuchtet helles Licht ;
Was ich gedacht, ich eil' es zu vollbringen ;
Des Herren Wort, es gibt allein Gewicht."

He orders the work of reclamation to be pressed on. He cannot now see its progress, but reports are brought to him. The land is being won from the ocean, and it will become fertile and remain so if those for whom he has won it by using his power and wealth will daily work to keep the dams he has made in repair, so that the tide may be held back. This gives him a new view of human

happiness, the sense of well-being that is to be gained, not by the attainment of some permanent and final result that will remain so apart from daily effort, but of one that is to be preserved intact only by work regularly done. It is by giving them surroundings in which they may reap the fruits of sustained and unbroken effort and of the quality in it, that he feels he has at last discovered the true fountain of happiness for them and himself alike. He breaks out into what is to be the final exclamation of his old age:

"Ja! diesem Sinne bin ich ganz ergeben,
Das ist der Weisheit letzter Schluss,
Nur der verdient sich Freiheit wie das Leben,
Der täglich sie erobern muss.
Und so verbringt, umrungen von Gefahr,
Hier Kindheit, Mann und Greiss sein tüchtig Jahr.
Solch ein Gewimmel möcht' ich sehn,
Auf freiem Grund mit freiem Volke stehn.
Zum Augenblicke durft' ich sagen:
Verweile doch, du bist so schön!"

He falls back dead. Satan thinks the condition of the original bond has been satisfied. But he is wrong. It was not in any sense that *he* has comprehended that Faust has said to the moment, "Stay, thou art fair." It was because he has risen at last to a higher level of spiritual existence, a level at which when attained his redemption has been worked out. Quantity is superseded. A new order has been reached, an order that belongs not to time but to eternity:

"Alles Vergängliche
Ist nur ein Gleichniss;
Das Unzulängliche
Hier wird's Ereigniss;
Das Unbeschreibliche
Hier ist es gethan."

I have quoted the second part of *Faust* because it illustrates in pictorial form what I have meant in speaking of different kinds of experience, and by the underlying conceptions which these kinds embody as distinctive of them. Thought and conduct alike disclose themselves as expressive of a variety of standpoints fundamentally differing. No one realised this more keenly than Goethe, and what we find in him we find also in Wordsworth, in Browning, and in many of the reflective poets of the Vic-

torian era. Goethe expressed the doctrine more definitely than others, because his mind was pre-eminently of a reflective character. In *Faust* he works out his doctrine of Redemption, as self-emancipation from lower to higher, progressively attained. For Faust the new heart and the right spirit that were what was needful for salvation came by slow degrees and only after a long and sustained effort. But they came at last because, and only because, the approach to the divine in man made them possible, by virtue of controlling ends which he dwells on again and again, not only in *Faust*, but in his lyrical verses. There is little attempt made by Goethe to throw the lessons he taught into systematic or even consistent form. But his success shows how, in the hands of a great artist who is also a great thinker, metaphor and symbol may be made potent as influences for awakening in the mind a sense of the highest of which it is capable.

CHAPTER XVII

THE INDIVIDUAL AND THE STATE

Is there a General Will? This is a question which has given rise to much controversy, and to a discussion which shows no sign of abatement. But much of the dispute has apparently arisen from some of the parties in battle array insisting on attributing to others views which they do not hold. If it is assumed that the mind is a self-contained and exclusive particular thing, that subsists with no relations to other selves excepting those that belong to externality, then it is obvious that there is no entity apart which can properly be called a general will. At most there can be resemblance of purpose-like activities which, if they can be called common activities, can be so called only in the sense that they resemble, in the way in which outside things resemble each other. What we have on this footing is analogy only. The question of a general will in any other sense cannot properly arise because its exclusion has been begged at the outset.

But suppose that this exclusion cannot be conceded! Suppose that the true nature of the self is that discussed earlier! Suppose that the everyday distinction between selves takes its rise primarily in difference of organism! What then? It has already been pointed out that such a view does not necessarily imply that the self is something merely superinduced on the organism. The latter may present itself at degrees of various kinds in its reality, and so may present itself as mind. If mind can recognise mind as included in its object-world, that is easily intelligible. I may find identity in thought between John Smith and myself, identity so tempered by difference as to give rise to a correspondence based on genuine sameness *pro tanto*. If the principle of degrees be one which characterises the entire universe, including knowledge and its object alike, that is a natural inference. It

results from the character of mind, which is that not of a thing but of an intellectual activity which reaches over the whole of the universe of discourse to which it gives meaning, and creates for itself the distinction between the self that knows and the reality of what it knows. To this universe of discourse reflection sets no limit. The self may be known as well as know, and the distinction is its own work. It is only when the self is taken to be no more than a static thing with position in space and time, and when knowledge is assumed to be a property of such a thing, that we fall into trouble.

If this be so the problem of community in will between John Smith and myself presents a further aspect. In the same sense as we think identically we will identically. For mind apprehending and mind expressing itself in choice are not separate entities. Thoughts and choices are not events in an external world. Their consequences may be different, but with these consequences they must not themselves be confused.

If minds are no longer thought of as exclusive things, with separate spatial and temporal positions, the doctrine of a general will becomes less difficult. It can be no outside compelling power, but must be just the correspondence between volitions. Alike such volitions stand for activity in thought, however much the consequences due to such activity are distinguishable. John Smith and I and our fellow-citizens co-operate in virtue of identity in intelligence. It is a question not of things but of thoughts. The result of our co-operation in the activities which follow on our conclusions is our joint contribution to the organisation of society and of the state and the institutions that are social and political. These institutions are thus the embodiments of really common purpose. They are fully intelligible only at the degrees in knowledge and reality which are those of the mind they express. In them mind thus *finds itself*, as Aristotle said long ago. In them I and you are spiritually coincident, and it is spiritual and not physical coincidence with which we are here concerned. At the level of reality at which we stand when we recognise society and the state, we recognise just ourselves and others as fellow-citizens who think the same thoughts and make the same decisions.

It is thus that we get to the common will. It is nothing apart from our own wills. It is just our own wills at their social level. Of course the purposes are largely concerned with what lies beyond our individual control, just as merely theoretical knowledge is concerned with a field that stretches far beyond the actual capacity of the individual. Various degrees of reality may be disclosed by the objects of the common will. Our reflection and volition both imply plurality in level. It is not in every aspect of our world that the identity is obvious that is characteristic of mind, or for that matter even of its correspondences. For we are separate organisms, notwithstanding that these organisms express intelligence and behave as doing so. It is only when we confine ourselves to the category of substance, and so are held to the level of which that category is determinant, that the principle on which the reality of a common will rests is difficult to understand. As interpreted by reference to the doctrine of degrees it is a natural consequence of that doctrine.

It follows not less plainly that the general will is something quite other than the sum of the wills of all. That is because we are not here in the region of arithmetic. The general will is no aggregate, for it is not numerically different from the individual wills in which it expresses itself. It is, as we have seen, just these wills interpreted in their correspondence. Many attacks in detail on the principle would have been found to be beside the point if this had been more widely seen to be a possible explanation. For the real attack must then have been transferred to the issue that arises earlier, that as to the actual nature of mind and of the distinctions between its objects. If these distinctions are merely numerical, and are between occurrences in space and time, then one set of consequences ensues. If the distinctions belong, on the other hand, to reflection and fall within it, in forms appropriate to the different categories, then quite another kind of inference forces itself on us.

I propose, therefore, in the rest of what I have to say in this chapter, to proceed on the footing that I need not restate the reasons which have led me to accept the latter alternative. I shall treat mind as what can be described only in language that is appropriate to mind and to no mere thing, just as I spoke of life as capable of description

only in the language of life. And I shall speak of reflection and volition, not as events in a non-mental world, but as activities that fall within mind as such.

The first question to which I wish to turn is one as to the character of sovereignty within the state. Here we find ourselves in a whirlpool of controversy. The school of monists insists that the state is one and that its sovereignty is one and indivisible. They affirm that sovereignty may be delegated, but that its source is a single source, the power of the state as the final form of social unity. Those who call themselves pluralists, on the other hand, declare that the state, so far as it is a totality, manifests itself in a plurality of forms, corporate, quasi-corporate, and otherwise, and that sovereignty is broken up and distributed among these. That there is one form which is nominally supreme from the point of view of *legality* is not decisive. For the theoretical legal power which is exercised by a constitutionally supreme body representing the state, such as, for example, the British Parliament, consisting of King, Lords and Commons, cannot really be exercised so as to dominate the power of other organisations of which the constitution is forced to take account. In days that at all events once were, the Parliament had to stand in awe of the Church. It could not secure obedience to its decrees from the people unless the people were satisfied that the command of Parliament was not in conflict with the command of God, given through the Church. And to-day the pluralists point to the power of such bodies as the Trade Unions, and to the fact that, with the developed prominence of industrial influence, Parliament can only control these effectively within narrow limits.

Whichever of these two views is right, I think that neither, at all events in its extreme form, is wide enough to fit the facts. If the source of the power of the state and of the reality of the state is the embodiment of common purposes entertained by the people who constitute it, that source can only be a general will, such as has been referred to above, and the true source of sovereignty must be simply public or general opinion. Now general opinion is not always easy to diagnose and ascertain. It has a history, and it often fluctuates rapidly. It may have entrusted a particular body of men with the duty of carrying its

decisions into effect, and it may appear, say in the programme nominally endorsed at a general election, to have expressed itself and to have given authority for the execution of its decrees. But none the less it may not really have done so. One of the most delicate and difficult tasks confided to a newly-elected Ministry is to determine what mandate has really been given. Not only may that mandate be really different from what it appeared to be from the language at the time employed by those who gave it, but it may be undergoing rapid and yet silent modification. This implies that it is the general opinion of the nation at the time when action has to be taken that is the ultimate source of authority, and that under a constitution like our own such opinion has to be interpreted, not as crystallised, but by continuous exegesis directed to ascertaining what it has become. Those who originally expressed opinions, perhaps even violently, may not really have intended to give a final decision or one that was meant to endure. They may have felt the points at issue to be too obscure, and have meant that the Ministers in effect chosen should decide for them what modifications of existing decisions and what further and fresh decisions might be required. And if the Ministers fail to perform this function for those who intended them to do so, they may be held deeply responsible for the failure, and may not be allowed to excuse themselves by pointing to spoken or written words as having been approved at the time of a general election.

It is not enough to say that in the ballot boxes a numerical majority of votes for a particular plan was found. For it may have become obvious that these votes did not represent a clear or enduring state of mind. The history of the questions at such an election and the changes in their context have therefore to be taken into account. A real majority rule is never a mere mob rule. The people is not a simple aggregate of momentary voices but is a whole, and it is this character that governs its manifestations of opinion. Representative and responsible government is thus a complicated and difficult matter, and, if it is to be adequately carried out, requires great tact and insight, as well as great courage ; qualities which the people of a country like our own have become trained to understand and to appreciate. No abstract rules for

interpretation can take the place of these essential qualities of character in the statesman.

The reason of the discrepancy is just the manifold nature of the mind of the individual voter and its self-developing and self-changing mode of evolution. It is this that the statesman has to study if he would get at the real general will of the people. That will may even be to devolve to him the duty of taking the initiative and of acting for his clients freely, as a man of courage and high intelligence should act, and he may have been chosen more on the ground of faith in his possession of these qualities than in order that he might take some specific action which the nation feels that it has not adequately thought out. Democracy, even in its most complete and thoroughgoing form, may imply all this.

Now if this is true there may be a great difference between the theoretical and the actual power of legislation, and the same may be the case with the executive government. Under a system of administration like our own there are well-known constitutional limitations on legal power. Theoretically the King may do many things, individual acts apparently of his own initiative, to which, if it could be proved legally that he had done them, the Judges in the Courts would have to give effect. But if the King were to purport to enact a law at Buckingham Palace merely by himself, the Judges might well say that they were forbidden by the law of evidence as it stands in our own time from even looking at a law effected in such a form, inasmuch as there was before them no legal proof that the King had made a law. In the days that followed the Norman Conquest the rule might have been otherwise, and James the First at least held views which were essentially at variance with it. In his time the doctrine of the prerogative was advanced to such a point that it was, for certain purposes at all events, unquestionable in the law courts. Bacon himself suggested that the Judges, though they be "lions," yet should be "lions under the throne, being circumspect that they do not check or oppose any points of sovereignty." But it was not long before the general sense of the British Community, as interpreted by the Judges generally, led the latter to refuse to recognise any legislative action by the Crown, unless clothed in a form provided by Parliament, or

expressed in some fashion established by Parliamentary sanction, as capable of being proved before them. It became necessary that every such measure should appear as brought forward on the face of it in the shape of legislation by the King, by and with the advice and consent of the Lords and Commons assembled in Parliament itself. The King could still in theory legislate, but the only possible proof of his having done so was the production of a constitutional form that had the aspect of a Parliamentary Act. If it could have been proved otherwise that he had enacted something, it does not appear theoretically that the Judges could have refused to give effect to it. But a gradually evolved rule of constitutional evidence became by degrees equivalent to a principle which had all the force of a rule of substantive law.

In the same way the King might conceivably of his own initiative make a treaty, but the Judges would require proof of this by the production of a document sealed with his Great Seal, which is, though not constitutionally under his personal control, the only admissible legal evidence of the King having so acted. In other cases the counter-signature of a Secretary of State becomes requisite for proof of an exercise of royal authority under the sign manual.

It is in these ways that in a country with an unwritten constitution like ours the law and the constitution, which are often at variance in their language, are brought into harmony. It was Paley who wrote, even in his *Moral Philosophy* published in 1785, these words :

" In the British, and possibly in all other constitutions, there exists a wide difference between the actual state of the Government and the theory. The one results from the other ; but still they are different. When we contemplate the *Theory* of the British Government, we see the King invested with the most absolute personal impunity ; with a power of rejecting laws, which have been resolved on by both Houses of Parliament ; of conferring by his charter, upon any set or succession of men he pleases, the privilege of sending representatives into one House of Parliament, as by his immediate appointment he can place whom he will in the other. What is this, a foreigner might ask, but a mere circuitous despotism ? Yet, when we turn our attention from the legal existence to the

actual exercise of royal authority in England, we see these formidable prerogatives dwindled into mere ceremonies; and, in their stead, a sure and commanding influence, of which the constitution, it seems, is totally ignorant, growing out of that enormous patronage, which the increased extent and opulence of the Empire has placed in the disposal of the executive magistrate."

The representatives of the nation assembled in Parliament can thus, by indirect as well as direct methods, make what is theoretical power keep within the boundaries of what is desired by the nation, and the Judges, by applying law, much of which is in truth judge-made, co-operate in giving effect to the process. But the Parliament itself, and even the administration which has its full confidence, are themselves also subject to limitations on their powers of a kind that are not what is technically called constitutional, but are yet of a highly potent character. I have referred to the influence in the past of the Church, and of the Trade Unions in our own time. But there are other forms in which opinion takes shape that have to be reckoned with. Tradition still bulks for a great deal. There are financial usages from which Cabinets are chary of departing, for fear of public prejudice, even though such departure may be the only way of securing both economy and efficiency. This is one of the sources of what is called "red tape." It has been so done in the past, therefore it must be so done to-day. Again, there is a good deal of attention paid to past practice, and also to sentiment, even when it is the sentiment of people who have not much power. That is characteristic of the British nation generally, and not merely of the rulers it chooses. But its Parliament has often displayed this tendency on a large scale. Walpole and his Whig colleagues were devoid of bigotry. Yet Walpole would not consent to relieve the Dissenters from the Test Act, although they were his warm supporters and asked for such relief. Most sensible people have all along wanted the Jews to be freed from political disabilities; yet it could not be done for a very long time. Catholic emancipation was altogether unreasonably delayed. The story of Roman ecclesiastical titles in this country is a familiar one. The Act prohibiting these was likely to prove a

dead letter from the beginning, and yet it was passed, on sentimental grounds. To-day much of our legislation about aliens is probably altogether in excess of public opinion, but it is the tradition of the days in which that legislation was brought forward that it should be insisted on. The explanation of these things, and of other political phenomena of the kind, is not brutal selfishness, or indifference. It is, as Hume pointed out long ago in his *Essays*, that " though men be much governed by interest, yet even interest itself, and all human affairs, are entirely governed by *opinion*." Opinion has moulded the action of Parliament and also the common law which the Judges administer. It has influenced administration at every turn. The more it is observed in the results of its operation, the more apparent does it become that opinion is the fountain from which flows power and in which the true source of sovereignty is to be sought. Opinion may create capacity or it may restrict it or distribute it. All these things it does continuously. It is the perception of dependence on opinion that restrains Cabinets and Parliaments from coming into conflict with what, from the point of view of merely theoretical capacity, are subordinate institutions within the State. Public opinion may be backing up the action of those representing even institutions which concern the general interest but little, to such an extent that if Ministers or Parliament were to try to meddle with these the requisite moral authority would be found wanting.

What constitutes a nation has been described by Renan in these words. " Man," he says, " is enslaved, neither by his race, nor by his religion, nor by the course of rivers, nor by the direction of mountain ranges. A great aggregation of men, sane of mind and warm of heart, creates a moral consciousness which is called a nation." Such a moral consciousness expresses the unity of the citizens in institutions which make up the state, as do the members of an organism make it up. The chief of these institutions, that which stands for the singleness of the state to people outside it, is the Government. This may assume the most differing forms. It is Hegel who observes (*Rechtsphilosophie*, paragraphs 273 and 274) that every nation has the constitution which suits it and belongs to it. The state, he says, is the nation's spirit and depends on the

character of its consciousness of itself. It is therefore idle to think of giving to a people a constitution *a priori*. The principle of the modern world as a whole is freedom of mind, and it is by self-development that those aspects come about which the whole presents. From this standpoint it was that he declared that philosophy refuses to concern itself with " the idle question as to which form is the better, monarchy or democracy." Aristotle had given in his *Politics* an answer of a not very different kind to such a question. But, whatever the constitution, we come back in the end to its foundation. This must be the consent of the governed. Even when there is an absolute monarchy this is so. The King may claim to rule as of divine right, but unless the people as a whole recognise this right he cannot exercise it. It is their assent to his title to be there, merely tacit and the outcome of tradition though that assent may be, that is the ultimate foundation of his title. There is of course infinite room for discussion as to why such assent should be given. It may be said, as was claimed by great French writers of the eighteenth and early nineteenth centuries, to be given because it is the command of God, expressed through His Church on earth, that it should be given. But even so, the acceptance of this command depends on the faith of men in the divinity of its origin. Such a faith is only a form of general opinion, however important it may be, and so back to its foundation on general opinion the basis of sovereignty is always brought.

If this be so it is obvious that even within the state the controlling opinion may operate in different fashions and forms. Supreme legal capacity may be given to Parliament, and yet Parliament may be restrained from exercising the legal capacity so given, excepting in accordance with certain standards. Parliament might, for example, so far as its legal power is concerned, pass a law continuing its existence far beyond the period at which a general election ought to take place. It might theoretically deprive the electors of their power to vote at elections, and so to review its conduct of public affairs. But if it did it would speedily be called to account, *somehow*. Civilisation has a good many resources even short of that of " Pride's Purge." A statute of the kind I am speaking of would be within the theoretically sovereign power of Parliament. It might

be passed so as to satisfy what are called, in the stricter sense of the term, the conventions of the constitution. But constitutional in a larger meaning of the term it would not be. Parliament would find itself confronted with a torrent from the source of all sovereignty that would overwhelm it. So, too, were Parliament to pass some Industrial Act inflicting injustice on the working classes, it might find itself face to face with the united action of the Trade Unions, and be reduced to impotence by a general strike of a magnitude greater in scale than any so far known.

Thus there has always to take place a careful balancing of considerations, in order to determine the extent of the mandate that has been entrusted to the legislature. For that legislature does not really represent sovereign power. Sovereignty has its definite source, and even the highest institutions in the state may not be able to claim it. It is the assumption that the state and sovereignty are single and indivisible that has been the source of confusion, and has given rise to much of the controversy between monists and pluralists. For some purposes the state is always single and sovereignty not broken up. Even where there is a federal constitution, and the executive is by the constitution independent of the legislature, the state is still one and indivisible so far as other nations are concerned. It is the state that stands for what is one and indivisible when we have relations from outside with the people of the United States of America. Yet within that state sovereignty is divided and can be exercised unitedly only if there is concurrence of purpose on the part of the separate institutions which compose it. The Dominion of Canada and the Commonwealth of Australia illustrate the same principle in other forms.

With ourselves in Great Britain the situation is theoretically different. But it is equally true that the Parliament is powerless against opinion. Even if its members had ceased to exercise a restraining influence upon the government it would always be because the constituents to whose wishes they have to be responsive were not sufficiently in earnest to insist on action by their representatives.

We can thus see how sovereignty means something that lies behind legal forms and institutions, and how it is

referred to a general will of the character defined for its real meaning. That general will may stand for a choice influenced from many sides. Religion, industrial requirement, tradition, and other springs of impulse of different natures, may all enter into the ground of the decision of the people at large. The statesman's task under constitutional or indeed any other form of government is never an easy one. He who acts in such a position from one maxim only is a pedant who spoils things for himself as well as for others.

It is because of this complexity in the considerations on which the general will of the people is based that the existence of the state is never the last word in controversy. Much complaint has been made against the doctrine that the state is itself subject to no law. As a proposition of technical jurisprudence this doctrine seems incontrovertible. For law as interpreted by the lawyer means a rule that the state lays down for its own people and enforces. Such a rule cannot be laid down in the same fashion for the people of other states, because the state that enacts it is unable to supply the same sort of sanction as exists at home. Its laws embody the purposes of its own people, not those of others whom it does not represent and who have given it no authority to apply coercion among them.

If, however, we pass beyond the region of jurisprudence there are other principles of which we have to take account. Within a state and apart from all legal sanction there exist, as we have seen, systems of morality and of the habitual good behaviour which the Germans call *Sittlichkeit*. These systems vary with the standards of different nations, but their essential features are common. All good people, of whatever nationality, recognise analogous obligations of truth and justice, and in the main they resemble in their sense of what is and what is not good form in social life. In the various great capitals society presents only minor differences. Men and women in all of these cities resemble in general purpose and in habit more than they differ. As in private life so it is in affairs of state. It is always possible, given mutual sympathy and forbearance, to develop a tendency to look to an ideal which may present itself as common to different nations. The desire for a League of Nations is the most recent illustration of how this may be attempted in

practice. The nascent League of to-day has followed on a period of exhaustion from fighting. But it is already beyond much doubt that it can be made to grow into strength if only there be general goodwill towards it. In the days before the war there had been ententes and concerts between great Powers founded on the same sort of ideal. But the tendencies of the times had allowed men's minds to become too much diverted towards other and purely national objects to allow the nascent purpose to be attained. That to some extent at least the purpose was a practicable one was shown by the successes that had attended the founding of certain limited ententes and alliances. The elimination of differences arising out of territorial and commercial ambitions had led to real friendships, with the disappearance of old rivalries. Nations had begun to see that they had duties towards each of the others in the same group, as well as rights. A new kind of international *Sittlichkeit*, based on more than the letter of any agreement, was developing itself.

But the effort to make all the great nations, and not merely those in the respective groups, accept this attitude *ex animo*, failed. There was not enough of sustaining faith behind the movement. The desire for a League of Nations which may supersede the old grouping, with its attendant dangers in encouraging attempts to balance power, is probably more real to-day than it has been at any previous period in the history of the world. It is not yet strong or pervasive enough to produce the sense of certainty as to its prospects. Still, the desire is there, and bears witness to its real foundation.

The state is no final form for the embodiment of the purposes of a people. The world is becoming more and more international. States are not isolated units. They continue to subsist only through relations with other states, relations which tend to multiply in volume as well as intensity, and which show no prospect of being superseded. As this is so it is natural that the purposes of the people of each nation should broaden progressively. There may be quarrels and wars in the future. Luxury, ignorance, and indifference always promote misinterpretations, and these are not easy to prevent from arising. But just as the mind of man extends to ends beyond his own private concerns, and beyond those of his family, or

of his city, so he has latent in his consciousness ends which carry him beyond the state to which he belongs. For the vital interests of that state he may be ready to fight and die, and nevertheless he may not be of those who pronounce on the side of their country whether in the right or in the wrong. The sense of what is seemly, and beyond this, conscience, with its insistence on the obligation to speak the truth and to be just, may bring the purposes of the citizen in his public life into sharp conflict with those of the man who looks only to the expediency that is of momentary importance and duration.

In short, there are levels in human purposes in which they rise above the state as a final form of end. Beauty and goodness and truth concern men neither merely as individuals nor as citizens. There is an outlook that is cosmopolitan because no other end than that of humanity simply as such can satisfy it. When our concerns are those of mankind in this higher sense we are still at a level which is that of the finite, but we recognise that our finiteness is pointing beyond itself, and that within unduly limited forms of self-expression mind is not to be confined.

The outlook at this level and the higher ends that direct it have, like those of lower degrees, embodiments which constitute their objective world. These embodiments have nothing approaching the definiteness which those within a state display. But they appear and have their witnesses in treaties, in diplomatic usages, in conventions about rules of international law, and in the movements for putting the mutual guarantees of international peace on a secure footing, and the agreements in which these are expressed. The stability of these objective embodiments of international purpose may not so far have been great. We may be still a long way off from such a basis of enduring *Sittlichkeit* among nations as will afford stability for the rules of what is called international law. The disregard of these rules through the great war illustrates this. But at least there are already some indications that higher than merely national purposes are moving mankind, and that it is struggling to express them in institutions that may in the end prove to have dominating influence.

There is thus, as indeed there always has been, reality of a nature outside and beyond that of the state. How-

ever shadowy it is there, and it shows itself to be at least capable of development into stable forms. This is only what was to be expected. For the source of this reality is the same as the source of that of the state itself. Both are due to the character of mind, which works and creates general opinion at levels that transcend the ends, not only of the particular self, but of the mere citizen of any particular nation. In ethics, in the recognition of each other of whatever race as human and as therefore entitled to respect as persons, in religion, in art, and in knowledge, local particularity counts for little. It is superseded at the higher degrees in experience at which the mind is discovering itself in the greatest aspects of its nature and activity. For the mind is, as has been previously insisted on, inadequately described as a thing among things. It is what can be adequately spoken of only in terms that belong to its own character. It is that within which all that is particular as well as all that is universal fall, and is that which by its overreaching intellectual activity establishes distinctions between true and false and real and unreal, that have meaning and validity only for itself. It is what exists at no single degree or level either in actuality or in knowledge. It is the dynamic principle to which is referred back all that falls within experience, and not only all that falls within it but all that gives it significance.

PART V

THE HUMAN AND THE DIVINE

CHAPTER XVIII

THE RELATION OF MAN TO GOD

To the question of how the individual is related to the state, we have now found the answer to be that the state embodies in external form certain common purposes of the individual citizens who compose it. It is the various characters which common social ends assume, and the general standpoints of the citizens whose ends they are, that determine the nature and distribution of the various public institutions within the state and their relations to it, as well as the character, extent, and distribution of the authority of the state itself. We discussed the meaning of what is called the general will and found it to lie in a correspondence based on identities in the minds of individuals with common social ends. If it were once clearly recognised that minds were not entities wholly exclusive of each other, it seemed that there was little difficulty in the acceptance of the conclusion that sovereignty could be referred to community of purpose in the citizens who compose the Commonwealth.

We have now to pass to a more obscure question, that of the relation of man to God. It is well to begin by endeavouring to clear the ground of familiar preliminary difficulties, and this appears to be possible only if a resolute application is made of the principle of degrees. So far we have seen a good many perplexities disappear as the realisation of the relativity of knowledge became plain. That is how the physicists have got over the trouble of the apparently inconsistent results of measurement in time and space; the biologists over the obtrusion of mechanistic obsessions; the psychologists over the demands for recognition of a physiological basis for mind; and the poets over the stern call to realities by science. In each case the demand made has been answered by its being shown that the conceptions on which those who made these demands based them were conceptions

of only limited application, an application conditioned by the level in thought and the interpretation of experience by which the character of the demand was determined. The meaning of reality proved to be by no means always of the same kind. For it varied with differences between orders which were distinct for reflection when carried far enough, and which resulted in forms of truth that can be expressed in no terms beyond those that are appropriate to their special order.

What, then, is the nature of the conception which we seek to frame in our minds when we speak of God? Obviously one belonging to a very comprehensive order, for it is in the light of no limited standpoint that we can set ourselves to explain downwards, looking for nothing above or beyond. We cannot mean by God a thing or a substance. For this would give us only what was an object to the mind and possibly external to it, as the old Deists held. Now Deism never succeeded in giving us any notion of God other than that of a finite person acting *ab extra*. It seems plain that God must be other than this. He can hardly, however, to go to the opposite extreme, be wholly transcendent, that is to say unreachable in knowledge. For that would be to leave Him as really confronting the subject, if not as an abstract notion yet as a mere inference, or alternatively as a bare awareness in feeling, as mysticism will have it. He would none the less in both cases be finite as being in truth outside of mind, in that He was thus transcendent. To call Him the Absolute appears to be not less objectionable, though on yet other grounds. To begin with, we do not know how this word is to be interpreted. We have no phase in experience that corresponds to it. Even in the highest efforts of poetry speech about it seems only to be possible when it takes refuge in spatial and temporal metaphor. Poetry may through such metaphor suggest truth, but adequate truth it cannot utter. It leaves us confronted with a result beyond, which we cannot express in words. For the emotion awakened is scientifically valuable only by its implications for reflection, and the implications cannot be rendered definite. They point vaguely towards a God who is a timeless *totum simul*, a conception for which the only kind of knowledge we possess and that has any meaning

for us has no use. For the concepts of all our knowledge have reference to an actual that is not static but dynamic and present in us, and so in some relation to time. To speak of God as the Absolute is, however, of value as indicating negatively what He cannot be, if not as telling what He is. It implies truly that His existence belongs to no partial or single level in reality. Substance He therefore is not, nor yet subject as differentiated from its object. He must not stand for less than the entirety, and such an entirety must be that within which all distinctions and resulting relations can fall. It cannot be adequately expressed as *a* mind, for this suggests that it may stand excluded from entities other than itself.

By this negative procedure we are driven back to look for our idea of God as to be sought in the nature of knowledge as it has already presented itself. We saw that the principle of degrees implies the view that knowledge is foundational in the sense of being all-comprehending, the first as well as the last within mind itself. It must therefore be that in which exists self-developed the entire hierarchy of degrees, within mind and within the reality which has no existence apart from it. We also saw that not only has the universe no meaning apart from such foundational mind, but that even the distinction between subject and object is mind's own creation and falls within it. Such a reduction of objectivity to creation through concepts and their resulting mental standpoints did not surprise us. For the principle of quantitative relativity, as shown to be creative of shape and measurement, by the physicists of our own day, had prepared us for the extension of that principle to qualitative differences arising from variation in dominant conception, and for so finding the work of mind to be present in every phase of reality.

We may thus speak of such foundational knowledge as the absolute of which we are in search, if we do not leave out of memory that what we are so speaking of is no absolute that is existent apart from mind as it is disclosed in ourselves. We are assisted, if we so speak, by what has already been pointed out, that the plurality of minds is a plurality that has meaning only at certain levels in reflection that are subordinate in that they import organic conditions, such that mind expresses itself in the forms of living beings with physical aspects. When we got

to the stage in knowledge at which such apparently mutually exclusive beings come into the relations that their intercourse with one another requires, we saw how this was only possible by reason of a correspondence based on genuine identity of thought, an identity which belonged to a level different from that of the externality to each other of events. We are therefore directed in our inquiry towards mind, not as activity in space and time, but as that for and through which spatial and temporal relationships arise. It is no *totum simul* existing independently of these relations. It gives them place within its entirety along with other aspects of reality. Thus it is only as presupposing mind that these aspects can themselves be explicable. That is an implication of the principle of relativity in its comprehensive form. Of course we start from our finite human knowledge, conditioned as it is by nature. For the physicist, for the chemist, for the physiologist, for the psychologist, the "That" and the "It" imply just man as they find him in nature. But not only do these standpoints yield results that differ fundamentally in logical conception, but they give rise to aspects which consist, and yet are all, in their own ways, equally true. Human personality and the human mind are thus complex in the orders of thought they import. More points of view than one are required if man is to be understood. The respective conceptions of the sciences just referred to are not only merely relatively true. They are a long way from being the only conceptions required for our interpretation. We are more than they make us out to be. Not only in art and in religion, but in philosophy also this becomes fairly plain in the light which is cast on the character of reality by the study of the all-embracing scope of mind.

Can we hope to work out the conception of the ultimate character of knowledge adequately? The question needs consideration. On the one hand, we are finite human beings, finite in this, that our thinking is conditioned by the organisation of the brain, a brain through which mind as it is in us expresses itself. On the other hand, this brain is not only physically active but lives and also thinks. It belongs, in the higher degree of reality which it presents, to the level of personality. So far as it belongs to this level its activity is that of a self, which is more than at

first sight it appears, for it turns out that thought even when thus conditioned is not the less the knowledge which has given rise to its own problems, and is limited in their solution only by physical difficulty in the wielding of what is potentially a limitless power over a limitless range. Of course that capacity is hampered by these physical conditions, but they are conditions which, if they confine reflection to feebleness in its procedure, do not affect its intrinsic character. None the less there are efforts which the human mind is as unable to make successfully as it is to visualise the contents of a tensor equation.

For all these reasons it appears to be as immanent that we must seek God. The physicists are to-day searching for the foundations of the phenomenal world of space and time in the work of reflection. As Professor Eddington observes, in the article which I have already quoted, the intervention of mind in the laws of nature is more far-reaching than is usually supposed. That is a saying which requires interpretation, but in it there is profound truth. In the same sense not less far-reaching is the intervention of mind in the laws which apply to the other phases of the universe. And this is so because at every turn the operation of the principle of relativity is as transforming in its application as it is where it guides us in our thinking about space. God can hardly be less than the process of mind in an ideal integrity, the process in which mind as all-comprehending is ever realising itself at a series of degrees which are divergent logically in so far as they are different in the dominating conceptions which lie at their respective foundations. To conceive God otherwise would be to conceive Him as really a finite God. Because the differences referred to are in level of knowledge, including self-knowledge, it does not follow that man's knowledge is indistinguishable from God's knowledge. They are not two separate entities, nor need they be so for the differentiation of finiteness from infinity. Even in the mind that is finite there may be degrees that take us beyond what is finite, intelligible to abstract thought indeed, but incapable of becoming present in direct sense experience. For that experience is the experience of a mind of physically limited capacity, and is therefore, so far as the senses are concerned, limited in range. In mind that is not thus trammelled by the

restrictions of a particular organ, but can present itself to itself in its completeness, with all the distinctions and degrees that it establishes as belonging to the entirety, present and yet with their separateness superseded, there can be no such limitations as characterise human experience. Time and space will not disappear, for their forms result from its own operation. But at a higher degree in reality they cannot present themselves as limiting conditions, for their source in mind itself cannot be obscure to a perfect comprehension. There is no phase that mind, as it must be interpreted in its perfection, does not overreach and hold within itself.

It is therefore to within our human experience, interpreted as implying higher degrees, that we must look for the eternal self that is all-embracing. We are not to seek an Absolute Being apart that cannot be reached by knowledge such as ours. We are to look on our minds as our means of access and, by studying the character of the levels to which reflection points us, to observe what direction they indicate to our reflection. It is to the self as we have experience of it in human life that we have to turn for our starting-point, and to nothing that has not an analogue in the characteristics of that self. We have to remember that our very experience teaches that the only explanation which satisfies in the end is explanation from above downwards, finding in the conceptions that belong to lower levels distinguishing characteristics that disclose themselves as the outcome of what is higher and more perfect in knowledge. What is perfect is most concrete and also most actual, for it is only by abstractions made within it that what is lower in the scale of thought emerges. It is no question of genesis in time. The genesis is due to thought, to the activity of mind. To say merely that things are, is to tell very little about them. For just as much from another point of view they are not, and it is only when the affirmative is bound up with the negative, as in change, that we approach what is actual. But even with this we cannot stand still, for reflection, which is always passing beyond its objects, crystallises the process, momentarily at all events, in what is grasped as fixed by its limitation through something different from itself and in that sense external to it. So we generalise to the conception of a quantity of such

things, and in distinguishing them from each other we are driven to think of them as having individual qualities of their own. We are driven so in our reflection to their measure, to their grounds in existence, to their contrast with the observing mind, and to limitless other relations which enter into their nature, relations which are not arithmetically finite in number because mind is unlimited in its activity. Such relations disclose themselves as entering into the very foundation and meaning of our diverse experiences. They appear together in aspects of their presentation. Because they are forms of an infinite and omnipresent activity, the whole of which is there in every phase, it is only in the abstractions made by reflection that we isolate them with the consequences to which they give rise. Whether a catalogue can be made of these categories, or whether they can be presented as a complete system, may well be doubtful. For mind is protean in the forms of its activity, which know no boundaries in range or number. The most guarded attempt to make such a catalogue or presentation is apt to suggest that there is some sort of absolute system capable of being taken in detachment, a view that becomes full of difficulty on scrutiny. It is the sense of such difficulty that has led to the disposition to reject the Hegelian system, on the part even of some who have attached high importance to Hegel's method of approaching the problem of reality. For practical purposes it does not appear necessary to make such an attempt to set up an absolute system as he thought he could make. It is sufficient if we have a firm grasp of that higher character of the self which directs us beyond our own finite forms, and which is indicated not merely in metaphysics, but in art and in religion. For these last, although, as I have already said, they cannot give us actual knowledge as the foundation of faith in aspects unseen, yet testify to their presence as ideally implied in a universe that we know to be at least far more than merely mechanistic.

It is important to have the significance of this testimony before our minds. The principle applies, not only to works of art in the ordinary sense, but to the highest forms of reflective poetry, as well as to the language of, for example, the Bible. Goethe, whose insight into the necessity of recognising underlying foundations was pene-

trating, has illustrated his own point of view in a great deal of his poetry. One sample I will quote presently. It is a poem on the nature of God, and is among the firmest of his utterances on this subject.

Art produces for us a different world from that of actual nature, a world with a reality of a different kind. This reality may be, perhaps it always is, " born again of the spirit." As Goethe says: " Die höchste Wirkung des Geistes ist den Geist hervorzurufen." And elsewhere,[1] " Nature organises a living, an indifferent being, the artist something dead, but full of significance ; nature something real, the artist something apparent. Into the works of nature the spectator must import significance, thought, effect, reality ; in a work of art he will and must find this already there. A perfect imitation of nature is in no sense possible ; the artist is only called to the representation of the surface of an appearance. The outside of the vessel, the living whole that speaks to all our faculties of mind and sense, that stirs our desire, elevates our intelligence—that whose possession makes us happy, the vivid, potent, finished Beautiful, for all this is the artist appointed."

Goethe, in this last passage, is distinguishing the relative reality of nature, as confronting us " indifferent " to mind, with the work of art as being at another level in the hierarchy of reality, a level at which the mind of the artist is actually embodied in his work. Goethe was not what is ordinarily understood by a metaphysician, but he possessed great philosophical insight.

In the *Proœmion* to his *Gott und Welt* he expresses himself thus :

" Im Namen dessen der Sich selbst erschuf !
Von Ewigkeit in schaffendem Beruf ;
In Seinem Namen der den Glauben schafft,
Vertrauen, Liebe, Thätigkeit und Kraft ;
In Jenes Namen, der, so oft genannt,
Dem Wesen nach blieb immer unbekannt :

. . . . .

Was wär' ein Gott, der nur von aussen stiesse,
Im Kreis das All am Finger laufen liesse !
Ihm ziemts, die Welt im Innern zu bewegen,
Natur in Sich, Sich in Natur zu hegen,
So dass, was in Ihm lebt und webt und ist,
Nie Seine Kraft, nie Seinen Geist vermisst.

[1] In his commentary in Diderot's *Versuch über die Malerei.*

"Im Innern ist ein Universum auch:
Daher der Völker löblicher Gebrauch
Das jeglicher das Beste was er kennt,
Er Gott, ja seinen Gott benennt,
Ihm Himmel und Erden übergiebt,
Ihn fürchtet, und wo möglich liebt."

In the Gospel of John we find what is in reality the same thought. At Jacob's well Jesus taught the higher truth to the woman of Samaria. Guessing that He was a Jew, she assumed that He would say that Jerusalem, and not the mountain of Samaria, was the place where people ought to worship. But Jesus told her that she worshipped she knew not what, but that the hour would come when true worshippers would worship the Father in Spirit and in Truth. "God is a Spirit," He said to her, "and they who worship him must worship him in spirit and in truth."

In religion, expressed in language such as this, we have a certain completion suggested for our human experience without which it would be one-sided and essentially defective. Reality is brought before us in a further aspect, an aspect which is offered to us as possible through the acceptance of a higher standpoint, to be attained, it may be, not reflectively, but by a voluntary submission of the will. To this we feel ourselves moved emotionally, rather than as the result of any process of logical reasoning. It is by what may be called constant practice in some form of the presence of what is highest in purpose and in level, that we seem best able to keep this emotion alive, and our experience of life appears to require such practice in some form if it is to obtain for itself the fullest fruition.

The self is personal. But it is more in its implication than merely finite. It is misleading, therefore, to frame images of the self in its highest conceivable and most comprehensive character as what we call a person. Finiteness and even thinghood are at once suggested by the implications of the human order to which personality as we are familiar with it belongs, and in what is necessarily a rarefied atmosphere we cannot genuinely advance if propped only by metaphors that are unsustaining and may fail us at any turn. The self nevertheless exists in all its possible forms at a degree that implies personality. The Highest Selfhood, the selfhood which is the foundation not only of the individual subject but of the entirety of the

universe, must therefore be at least personal. But as it must be taken to include as falling within its own activity the distinction of self from not-self that is characteristic of human finitude, and to preserve this distinction yet only as its own act and determination, so it must, if an imperfect expression may be used, be, not merely personal, but super-personal, in virtue of its reality as extending beyond the limitations of the finite. For all such limitations fall within itself and at the most are there only for it as its own production. Personality, as we have seen, implies finitude, if there is to be differentiation between persons. But even our human experience of our relations to others, and the very social surroundings which the mind requires for its development, carry us beyond such mere finitude to a standpoint in which correspondence in thought importing identity is presupposed in the recognition of ourselves in association with our neighbours. At this standpoint personality lifts us to a level in reflective self-consciousness higher than that of a selfhood that is exclusive. Not merely I and you, but neither merely you nor me, form the ground of social intercourse and of citizenship. In art, in religion, and in knowledge itself, this more than personal standpoint emerges yet more distinctly, and we are reminded that all atomic views of human existence fall short of finality.

There is thus a natural impulse in experience which directs the mind to a fuller view of itself than as a merely living and intelligent organism occupying a definite and particular station in the world of space and time. The larger outlook is that in which the consciousness of our own relativity, as well as the relativity of our knowledge, becomes the dominant one. Just as space and time are found to be dependent for their reality on outlook, so do other aspects of the real turn out to be equally dependent. We visualise only from standpoints which emerge on scrutiny as being neither final nor even adequate to the possibilities that confront us. The conceptions which are appropriate solely to isolated standpoints dominate not only our thinking but our volition. But we learn progressively that it is not in exclusive forms of contemplation and action that we can attain to that of which we are in search. As higher standpoints are reached our vision becomes wider, and the object-world, the relativity of which begins to be

realised, becomes less foreign. Reflection and action come to seem less and less separated. As the object-world ceases to seem external and strange to the subject, conception and execution appear as in their ultimate forms inseparable. For mind that knows the distinction between its object and itself as one due only to finitude in knowledge, to conceive and to create are no longer mutually exclusive ideas.

One of the hindrances in preventing such an idea from appearing adequate to the facts is our notion of time as independent and self-subsisting. Purpose and the action it directs seem to us to be necessarily separate in it. For mind which is limited through its activity having to express itself under physical conditions this may well for some purposes be so. But, as the physicists themselves have taught us, time is not what Newton took it to be, something existing absolutely and independent of mind. The doctrine of relativity has shown us that time, at least as we experience it, may be in its forms merely appearance, not in the sense that there is a real time relatively to which it is only appearance, but in the quite different sense that its relativity is of the essence of its reality, and that it owes that reality, notwithstanding the absolute form which we erroneously attribute to it, to the constructive interpretation of intelligence. The character of the time relation varies, even for physical science, with the standpoint of the observer. Its apparent fixity is the creation of abstraction. At certain standpoints we accept it as fixed and final in its appearances. At other standpoints we do not. Therefore for mind, when aware of itself in its completeness and of the relativity to itself of the entire universe that falls within it, succession in time is indeed a form of which it takes account, but takes account only as determined by standpoints that are not final. It is not either by adding its various outlooks together or by blotting them out that knowledge becomes complete. It is by rising to a level above them in comprehension, and so superseding while preserving and not destroying, that even in daily life knowledge develops itself. Who has not noted the effect of fuller study in enabling him to grasp details as a system? Whether it be in the reading of a book, or in the painting of a picture, or in the appreciation of a poem, what we find we need is to become so familiar

with the details that we can combine them in a whole and interpret them in a system. It is not by what logicians call "linear" inference that knowledge is in the main extended. It is by ascertaining the reciprocal implications of an assemblage of details, and learning in this fashion its entirety as the system in which these details have their meaning. The work a judge has to do when he hears and tries a case in Court is not simply to draw an inference as to whether a certain state of facts fall under an abstract principle of law. His main task is to ascertain the true relations involved in what is proved in evidence, to weld the facts interpreted in these relations into a whole in his mind, and to consider the juridical significance of the whole when so conceived and not before it seems to him to have become adequately so conceived. In this way a juridical and authoritative decision, a new fact in the object-world of society, is brought into being by mind. The analogue of such processes of finite mind guides us in framing an idea of what must be the character of mind that is not finite—in other words, that has all levels within itself as a realised entirety. In the first place what we have to think of is not *a* mind, but mind. Our own relations to our fellow-men in our conversations with them, relations which depend on the recognition of identity in thought, indicate this direction. In the second place we must not think of its object as foreign to such mind, or as known except as what falls within it. Here the extended and most general form of the principle of relativity furnishes us with the clue. In the third place we must not represent to ourselves end and means as falling apart. Time if transcended is not abolished. It is no question of a *totum simul* that is before us. But time is, on the other hand, no longer invested with the notion of absolute self-subsistence, or with that of more than form dependent on standpoint. It seems to follow that for mind, conceived as the indications thus direct us to conceive it when in final and perfect completion, thought and creation cannot be otherwise than ultimately inseverable in conception. For the process of knowledge is no longer one conditioned by time. Rather does it itself condition time. All possible standpoints are embraced, embraced not as separate units, but as aspects within one entirety, aspects each of which has its sub-

ordinate place in the hierarchy of a comprehension that is ideally all-embracing and perfect.

Of such comprehension we find, as I have said, analogues within our own minds, although analogues which can but give direction to the thought and feeling that inspire each other and lift us beyond ourselves. To perfect comprehension, in which feeling and reflection cannot be separate or exclusive, they do not lift us. They may fill us with emotional contentment by the indications they suggest of our close relationship to the infinite. Feeling as it is awakened in us by art and by religion can so lift us, when it is of the quality that suggests analogy between the human and the divine. It is the emotions of this type that :

> " Be they what they may,
> Are yet the fountain light of all our day,
> Are yet a master light of all our seeing ;
> Uphold us, cherish, and have power to make
> Our noisy years seem moments in the being
> Of the eternal silence ; truths that wake,
> To perish never ! "

But while art and religion and natural goodness of disposition may produce this sense of peace, there is that which they cannot accomplish. When reason has made wounds, then only reason can adequately heal them. That is why for the complete approach to God the great thinkers of the past have insisted on the necessity of adding to art and to religion knowledge. For only on knowledge as the foundation can we raise an edifice which is not in peril of being shaken by the convulsions to which all that is based on subjectivity is liable. Even knowledge itself, however penetrating and profound, and however great the sense of command it may give, shares to some degree with the heart " the vassalage that binds her to the earth." For as Wordsworth again says :

> " Distempered nerves
> Infect the thoughts ; the languor of the frame
> Depresses the soul's vigour."

That is because mind in us shapes itself in human form, with the resulting feebleness that ever attends our human personality.

Still, when all has been said that can be said about the

dependence in mankind of mind on matter, the fact remains that the effort which man can make when he reflects is limitless in its scope. It is true that his capacity to wield his instrument may be affected in the ways that Wordsworth speaks of, and that:

> "Reason, best reason, is to imperfect man
> An effort only, and a noble aim;
> A crown, an attribute of sovereign power,
> Still to be courted, never to be won."

Yet "the wonderful might of thought," as it was called by Hegel, remains unrestricted; unrestricted because there are no problems excepting those that it has itself created.

"Irks care the crop-full bird? Frets doubt the maw-crammed beast?" It is man only that is so troubled, and that because he is allied to God. In man the infinite is inherent and of his essence. That is why he is not satisfied unless, either through feeling or through thought, it has come to him that he is more than he has taken himself to be.

We return to the principle which has been throughout these pages the basis of the analysis. Mind is foundational to reality in all its forms. Not *a* mind, for to speak of *a* mind is to treat knowledge as a mere instrument, as a particular thing, as something which might properly be interpreted through the conception of substance. But that conception and every other form of the actual and the ideal, alike fall within knowledge. Its distinctions are those that itself it makes. Subject and object, conception and feeling, thinking and willing, these all arise as of separate characters only in virtue of differences which the activity that is of the essence of reflection establishes. Outside knowledge, interpreted in this larger significance, we cannot get. And if we desire to find from the analogy of our own knowledge its nature as passing beyond the limited experience that is ours, we must at no point forget that knowledge is in its fullest aspect foundational, and we must seek its character in the study of its works bearing this in mind.

The distinctions which we make between the mediate and the immediate contents of our consciousness, the fashion in which by abstraction we define and separate out our standpoints and the conceptions that belong to

them, the contrasts we establish between the relative and what we take to be absolute, are all of them the outcome of the purposes we pursue in arranging our results in forms which by reason of our finitude we seek in order to give them distinctness. Abstraction as the outcome of concentration on particular ends is everywhere present. Now it is just this kind of distinction and division that must be regarded as no longer final in knowledge as foundational to reality. That such distinctions and divisions must be assumed as in a degree preserved in even knowledge at this level, the knowledge which is both last and first, and has all its purposes as part of and within its own nature, seems clear. For they are the creations and outcome of that knowledge, although their emphasis is due to the finite forms it gives itself. I cannot agree, as I have already said, in thinking that knowledge of this kind can be different in character from human knowledge, or that the discursive and relational character of our reflection prevents us from at least interpreting that character. For it is, after all, only by reflection that we are led to conceive it as an ideal after which we are to seek. Its character must surely be that of thought which, as Aristotle and Plotinus declared long ago, knows itself in its object and its object in itself. End and means, mediacy and immediacy, are separated in it by no abstractions that remain. For the dialectical activity that is of the essence of thought in the only form in which we can attach meaning to it supersedes such abstractions as soon as made.

Goethe's saying that " man never knows how anthropomorphic he is " has a wide application. For man is ever prone to fashion God in his own likeness, as a being with attributes that resemble his own and are really human. Theologians and even philosophers are apt to let the purposes of the moment control them, and to apply limited categories which are appropriate only for lower standpoints to what has meaning only from the highest and most comprehensive standpoint of all. The infinite foundation of all thinking as well as of all being cannot be substance but must be subject whose object is nothing that is outside itself. It is in this sense that God is immanent. It is the great principle of the relativity of all man's knowledge that compels him to look for the form in which that relativity reconciles itself with final

truth by simply observing how knowledge develops itself within his own mind. He must not allow his human purposes, for instance his desire to present to himself the Almighty in pictorial and vivid form, to deflect him in the use of his method. If he yields to what is a powerful temptation he becomes anthropomorphic at once. The strength of art and of religion lies in their power of inspiring emotion of a high quality, high because its interpretation in thought, which cannot easily express what it strives after except in the symbolism of feeling, is itself of a high order. In doing this they resort inevitably to the use of metaphor, and in using it they become pictorial and make the God they are seeking to realise for us appear as He is not. Such metaphors are yet of high value for the quality of the immediate consciousness of which they are expressions. Of this nothing else can indeed take the place. When the quality is great enough these metaphors can at least suggest a standpoint which they cannot express. But they must always, if they are not to land us in controversy and confusion, be carefully guarded by reflection, and recognised as being, however valuable for our human sustenance in spiritual life, no more than they really are, that is to say, inadequate expressions of ultimate truth. For the mind that could take in at once all standpoints in relativity and combine them in a single entirety in which each should have its place and no more than its place, resort to metaphor would be wholly superseded. It is the apparent divorce of sense and thought which the finitude of mind and its relativity in apprehension brings about that gives the occasion for the necessity of this symbolism.

If thought as it shapes itself in the mind of man is abstract, it is yet powerful in virtue of that abstractness. For the abstract character is the outcome of limitation in purpose, a limitation of purpose that is essential for finite capacity. He who would accomplish anything has to limit himself. The necessary abstraction has its compensation in the range which it confers on intelligence. Mathematics affords an illustration of this. Its symbolism enables quantitative order to be expressed with such refinement that, as in Einstein's fundamental equations, even the space and time of experience can be dealt with conceptually and yet in symbols that retain their visualised

precision. The so-called intervals between his point-events are measured by no co-ordinates that we experience. They are in this respect analogous to those categories which Kant conceived as being real in that they made schematisation in space and time possible, but could not themselves be represented in any such scheme. They are, in other words, concepts which so far from being derived from experience are that through which alone experience can become significant and so real. Metaphysics, like mathematics, can advance only by putting everything that is irrelevant to its end out of sight. That end is to determine the ultimate nature of reality. This must for the metaphysician be accomplished by the use of the most comprehensive categories. He cannot remain, like his colleague, confined in his studies to those of order in externality. Nor is he concerned, like the experimental physicist or the chemist, simply with causes, or like the biologist with ends and the conceptions that have for their language that of life. He cannot be satisfied, as the psychologist must be, by holding out in objective fashion, yet only by abstraction, thinking and feeling as if they were processes that could be adequately studied as occurrences in space and time. All these methods have their great uses, but the uses are for purposes which are limited and relative in character, and must be restrained in their ambit.

Now the ultimate character of reality cannot be studied under such limitations, any more than it can be investigated by what is really an analogous method of abstraction, the use of metaphors drawn from the surface of experience. We are dealing with conceptions, but with conceptions that have to extend to much more than can even the point-events and world-lines of the physicists. We have to frame conceptions of nothing short of mind, the highest and also the richest of what it is possible for reflection to grasp, because it is that to which all else must in ultimate analysis be referred. In this sense mind, because it is what is perfect and real without qualification, is that which is the hardest for the language of finitude to define. Within it all abstractions fall, for out of the activity of mind they all proceed. It is therefore the most concrete in the hierarchy, for nothing even appears to fall outside it, except in virtue of some distortion. It is no instrument

that can be taken up or laid down, or subjected to outside scrutiny. For the taking up and the laying down, and the very scrutiny and the testing of the truth thereby, are its own act and assume its validity. It must therefore study itself, not from without but from within, in its awareness of its own working, in its consciousness of itself. Even so the task is hard for the mind that sets itself to explore a field that for it has no limit. It is only in general conceptions by means of which reflection passes beyond immediacy in feeling, that mind can for us express its own self-consciousness and describe its own nature.

It is thus to self-consciousness disclosing its character as it does in man that we come back as the source of our knowledge of God. The wonderful might and range of thought exhibit themselves here as without limit, even when in the form which Mr. Bradley has called relational and discursive. For that it is a relational and discursive form does not in itself render our task impossible. There is no barrier which prevents us from interpreting what is implied by the higher degree of reality which must distinguish mind as it is in God from what it is in man. Eye cannot see and ear cannot hear it, for its nature does not admit of its being seen or heard, excepting so far as it may be represented in forms belonging to the lower degrees within its nature to which the senses of mind with organic form belong. But thought, even when as it always is for us relational and discursive, is no static event in externality or in time. Its nature is to be conceptual, and as conceptual to be identical in all its differences. The consciousness of man is not a different thing from the consciousness of God. Man and God are not numerically distinct subjects in knowledge. They are the one foundational mind, disclosing itself in different degrees or logical stages in the progress of reality, but as identical throughout divergences in form. It is the identity that underlies the correspondence of our thoughts and renders them what they are that relates man to his fellow-man. It is the same identity in difference that relates him to God.

If this be so it is apparent that to regard the finite and the infinite mind as different entities is only to court disaster in our reasoning about them. Difference there is, but it is in degree in reality, and it is a difference which is intelligible to logic. The human mind, conditioned

as it is by organic hindrances in its power of wielding its instrument, may be inadequate to a complete and systematic presentation even in abstract concepts of what is present in itself. But the instrument within its grasp is not inadequate, for that instrument is just mind as such. Our approaches to the ideal may be asymptotic. But it is a false image that makes that ideal seem to be truly something far away and unreachable. God is present in us, and it is in God that our fully developed reality must centre.

We cannot rise above our own level in existence. But that need not discourage us. It is in the present realisation of the ideal, in the struggle to attain to it, and not in the actual attainment of what our position in the hierarchy of reality excludes from being capable of final and closed fruition by us, that the truth for us lies. Our knowledge is relative, and relative it must remain. But if we know that it is relative, and what its meaning is, and the place of that meaning in the full entirety to which it belongs, we have gained what we require. We have a standpoint from which we can rise above that which is really below us, and we have equally a standpoint at which we can contemplate our significance in the light that comes from above. From above, but from no source that is separate in space or time from our own personality. For the source is one that lies within us and gives to self the significance which it possesses. And so it is that as the fashion of this world passes we feel moved more and more to set our feet on the rock that is abiding.

It is the conception of these things as truth that underlies what is greatest in reflective poetry and in religion itself. These teach us that in our finiteness there is nothing to make us despair, if we will only keep before our minds that our ideal is one that is present with us, and not afar in some absolute region apart which we know not. It is in the quality of our striving, infinite as an ideal, and not in the goal which if attained would end the striving, that truth lies.

> "Man, therefore, thus conditioned must expect,
> He could not, what he knows now, know at first;
> What he considers that he knows to-day,
> Come but to-morrow, he will find misknown;
> Getting increase of knowledge, since he learns
> Because he lives, which is to be a man,

Set to instruct himself by his past self;
First, like the brute obliged by facts to learn,
Next, as man may, obliged by his own mind,
Bent, habit, nature, knowledge turned to law,
God's gift was that man should conceive of truth
And yearn to gain it, catching at mistake,
As midway help till he reach fact indeed,
The statuary ere he mould a shape
Boasts a like gift, the shape's idea, and next
The aspiration to produce the same;
So, taking clay, he calls his shape thereout,
Cries ever, 'Now I have the thing I see';
Yet all the while goes changing what was wrought,
From falsehood like the truth, to truth itself." [1]

[1] Robert Browning, "A Death in the Desert."

CHAPTER XIX

ETERNAL LIFE

THE time has come to enter upon a further question. What significance are we to attach for the purposes of the accidents and limits of ordinary life to the ideal of self-completion implied in our knowledge of God as immanent in us ? Is it a significance that in an intelligible fashion discloses that ideal as any sort of fact actually attained and present ?

There are obviously many points of view from which ideal self-completion is not accomplished in particular experience. Still, it may be a present and shaping end. It may mould our experience in a fashion such as that in which in organic life the impulse to fulfil an end preserves continuous form amid change of materials, or in a fashion such as that in which the universal gives meaning to the particular in what is actual only in their union. There we find reality attained in individual shape ; in an activity that, because of the moment in it of what is general, is ever stretching beyond what it has set up as its own limits. Our experience, in our consciousness of self in its relation to the world, is always revealing to us the ideal as at all events an immediately present and impelling power. At a degree even higher than that exhibited in organic life it is there, and always as dynamic and continuous in its process of self-accomplishment. In knowledge the ideal has a yet higher place than in mere life. For it appears as an entirety within which falls, distinguishable as if self-subsistent only for abstract reflection, every standpoint from which mind directs itself. Relativity arises from the differentiations so made, and it is the ultimate character of mind to establish within its all-embracing ambit these differentiations and the reasons for them, as its degrees or as levels attained in its own progress towards self-completion in a perfect entirety.

It is so that the principle of relativity in knowledge seems in ultimate analysis to find its justification with the solution of many problems in consequence. If the ideal is never present as a self-contained and finally accomplished fact, it is not the less the foundation and meaning of finite activity. Just on that account truth and freedom from limitation by what is lower are attained in the very quality of a sustained effort towards that ideal.

We do more than we are aware of when we thus conceive and dare. We do not stretch out our hands in vain, moved merely by love of the shore from which we are divided. We are conscious, dimly, it may be, but sufficiently, in feelings and metaphors that spontaneously fashion themselves, of a transcendence of our own selves. The real is within and not apart from us.

> "With wide-embracing love,
> Thy spirit animates eternal years,
> Pervades and broods above,
> Changes, sustains, dissolves, creates, and rears.
>
> "Though earth and man were gone,
> And suns and universes ceased to be,
> And Thou wert left alone,
> Every existence would exist in Thee.
>
> "There is not room for Death,
> Nor atom that his might could render void,
> Thou, Thou art Being and Breath,
> And what Thou art may never be destroyed."

Our words, when we utter as Emily Brontë thus spoke, express what we really mean by God.

Even in the form that relativity assumes in connection with our measurements of space and time we learned something that is of use in this further stage of our inquiry. There is not one system of space and time in contrast with which the others are subjective perversions. Every separate system is relatively as real as every other. So when we pass to the worlds of biology and psychology where, not systems in which the observer measures, but conceptions which he employs determine the characteristic reality of the object observed, the same lesson becomes apparent. Change in standpoint gives no change in the actual. In each such case we get reality only of a special degree or kind, but it is not the less on that account reality.

Now this must be so equally with the change in standpoint of which we have been speaking in connection with the conception of immanence. Here is yet another aspect in which mind gives birth to what is actual.

Let us follow this out in its reference to human life. A mother loses her son. She is broken down with a sorrow that is passionate. Time does not abate that sorrow. No consolation makes it seem less. For, say what it is possible to say, still the hard fact remains. The touch of a vanished hand is no more, and the tender grace of a day that is gone never returns. Time passes, but the soul that remembers is faithful. She does not think out in detail what she longs for. She herself may have grown old, and her son, had he still lived, would also have changed. But none the less she longs to be by him again. It is not that she visualises a meeting with him—changed, it may be, by the lapse of a long period, changed in circumstances, in age, in character. Nor does she think definitely how it would seem to him if, stereotyped as at the moment of his death in mind and body, he, a youth, were to come to find his mother altered and grown old. What above all she desires is that if they meet again it shall be, not as strangers, but as mother and son. For the relationship is one, not of living beings in their mere externality to each other, but of *spirit* to *spirit*. It is a relationship, not of merely separate lives, but of mind to mind, a relationship which, as we saw in an early chapter, depends on correspondence, on identity amid difference, on feeling that is more than mere particular feeling. It was this that the physical organism of the son expressed for his mother as symbolic of his personality. The interpretation was and remains a spiritual one.

Now this interpretation would not remain if the symbol were altered in character, and, as a consequence, the mother does not really desire to have restored in another life, unchanged and undeveloped, a being for whose very existence growth and development were essential. The relationship requires continuous self-alteration for its reality, and such continuity it can only have if its nature is more adequately conceived. It is therefore not sufficient that a life beyond the grave should be a mere repetition under altered and divergent circumstances of the old life here. That is what spiritualism seems to overlook,

for a mere repetition must prove unsatisfying, and cannot be sufficient from the higher point of view. The life of which it tells us, as of something brought back to us just as it has always been, lacks the spiritual advance that is needful. What makes the suggestion additionally unattractive is that the interpretation may have been filtered through some medium of no high quality. As Mrs. Bosanquet has expressed it, in her poem "Non tali Auxilio": [1]

> "Were there indeed no barrier that could save
> Their spirits from the importunity
> Which looks to necromancy for a proof
> The dead will talk with us, nor hold aloof,
> Far better were the silence of the grave
> Than life entangled in futility."

From one outlook the son that death took became an inert physical object that was carried away in a coffin. But is there no other aspect of his death? For the son, that he should die is that an event happens within his object-world, bringing about the termination of his relation to it as a bodily self for which it is present. He does not look on that event only as does a mind apart. All of what happens falls wholly within his world, an object-world that is no external thing independent of another thing called his mind. For both belonged to the entirety in knowledge which he as himself mind has throughout expressed. His death is therefore an event happening to himself as his own object within that object-world. In its fullest aspect it was an event *for* his mind and relatively to it. Apart from its relation in its place in nature to that through which alone nature is possible, it has no meaning at this standpoint and no reality.

Just as Newtonian space proves to have merely relative reality when the character of space is more fully comprehended; just as independent nature is seen to be unreal if separated from the interpretations which it receives in and for knowledge; so death becomes unreal for the mind which it affects solely as a physical event in its world. It is an actual event, but actual only in so far as knowledge, confined to a definite but not final level, has invested it with a reality that is relative. For mind

[1] In the little volume entitled *Zoar*, written by her husband and herself.

reaching over it as over a particular happening within its own experience it possesses a different aspect.

Nor has this been so only for the dying man. It is so also for her who has been the spectator of his passing from her. For the mother, if her outlook is of a character wide enough, feels it, even though she cannot express her feeling in words. She knows, dimly it may be, but as she holds certainly, that all was not sufficiently recorded when what was the son she loved was carried away from her to be laid in the earth. By faith, the sense of things unseen, because demanding vision of a higher order in knowledge, she is aware that it is not so. And inspired by her sense of higher truth she may exclaim, "O death, where is thy sting? O grave, where is thy victory?"

Do not let us misinterpret the scene. At its own level in the orders of knowledge and reality, death is an event as actual as it is sorrowful. But at a standpoint belonging to a different order it has another meaning altogether, a meaning in which death does not touch the subject-self. This self is no transitory physical object intelligible merely as such. To interpret death adequately a highly important standpoint has to be taken into account from which the self is recognised as what is not simply a physical organism. Even at that for which death is an event belonging to nature there is a meaning that is more than individual. As the life of the human organism had a beginning, so it must have a termination. The living being exists, not as a bare particular, but as a member of his kind, as an individual who must pass away, so far as he is one among other individuals in a natural world, in the interests of the species to which he belongs. He has other ends, too, which he has to fulfil in general interests analogous. He belongs to his country, and it may be that he can only fulfil his duty by dying for it. He may be called on to wear his life out for the sake of those who depend on him or for the sake of his neighbours. He lives in and through an environment that entails duties towards society and not merely towards himself. That he should, after his life has run its course, pass away in the form in which he has lived, is accordingly as natural as that he should have come into being. If that course is interrupted by premature death, such interruption is due to the contingency belonging to all

that is external. But in truth it is quality and not quantity that is important.

It seems, therefore, that it is the self regarded as subject, at a degree in reality of a character which belongs to what is higher than the mere time series, that the mother must think of for comfort in her bereavement. It seems, too, that it is in this aspect that she does just in fact look at the self the external symbol of which is no longer present. Reappearance on earth as a phenomenal body there, attended as it would be with ever-occurring changes and breaches in the continuity of a personality that implies life in nature, could never give her back the old tie unbroken in its highest possible form. It is for this reason that spiritualism seems to me to miss the true point. I will not discuss the results of observation of which its votaries are convinced, for I do not know with the accuracy that is essential what they are or what they mean. Experience in Courts of law has taught me how misleading and how fragmentary such records are apt to prove. People offer not merely the facts, but their own inferences inextricably mixed up with them, even when acting with passionate desire for truth. I have learned from observation the necessity of calling in question closely all testimony that is not only faithfully and deliberately offered under sanctions that enjoin the nearest practicable approach to accuracy in detail, but that is not also sifted by skilled cross-examination scientifically directed. Nearly everything that I read, even of what is written down by the best kind of spiritualists, is open to criticism of this kind. The application of a sifting procedure such as that of a Court of Justice appears to be highly desirable before such testimony, even from the most honourably intentioned witnesses, is accepted as a basis for inference. Moreover, so far we know but little of the phenomena of what is called telepathy, a quality of mind which may still reveal much that is new in a yet strictly natural order. Nor have we yet studied exhaustively the content that lies below what is directly present to consciousness, and is hidden in the apparently inexhaustible pit of the ego !

But the other interpretation of immortality stands on a different footing. The soul has here a different meaning. It culminates in personality with an aspect other than

that of mere nature with its time system. To the time series the mind of course stands in an essential relation. Of this relation we found early an illustration in Professor Whitehead's analysis of the function of sense-awareness in making a congruent world possible. It is in the self that the universe centres, and it is in the self in another aspect, of a kind isolated by the abstractions we have to make in reflection, that we find an object among a multitude resembling itself in nature. It is in our individual experience that these two standpoints are brought together in a reality which the two views taken in separation present only partially. There is nothing in point of principle more baffling in such an idea than there is elsewhere in that of the relative reality of the different degrees in knowledge. In the experience of the concrete individual we find the distinction drawn, and we find it drawn in emotion as well as in reflection. That is because the individual is throughout concrete, and his mental activity lies as much in feeling as it does in reflection. The two are inseparable in the actual life of mind, and are unreal in any attempted separation. Thus we always present our ideas in images, but in images that are significant and fraught with meaning.

When, then, we interpret immortality in the larger sense as life that is eternal as being more than appears in the time series, we fashion images which import this. These images may have spatial and temporal forms. They are generally only metaphorical, but they are symbolic of what itself is of no character that is either spatial or temporal. This is the entirety to which we have so often referred, that whose aspects are distinguished in the different forms of knowledge, forms whose standpoints all fall within the whole to which they belong as modes of its partial expression. In art we have the entirety revealed in representations which, when they come to us, born of the mind of a great genius, we may feel to be adequate, inasmuch as we have no higher standard of the same order by which to get beyond them. In art the particular and the universal, the symbol and what it signifies, may be fused in a perfection of form that is inseparable from the matter to which the form is given. The work of art is in this way apparently immediate. It has been born, not of nature, but of mind, and yet in that birth from mind

so directly and fully endowed that in it there is little work left for reflection to do in bringing what is particular into harmony with what is general. The perfect individual symbol speaks and interprets to us for itself.

In religion there is something analogous. Its characteristic is that the relation of the self to the entirety in which its reality lies is the relation of man to God. Here, again, it is not in general conceptions that the relationship is currently rendered. It is in images and symbols fraught with inherent meaning, just as in a great picture. Only the feeling is feeling that is yet more absorbing than that of the artist. For it is the feeling of life beyond time gained in the submission and surrender of the life that belongs to time, and by the whole-hearted acceptance of the fact of finiteness. We have to be in another world while yet in this one. We are what we seem to be, and yet as we seem to be we know we are not real. We feel that we must rise above our natural selves.

> "God harden me against myself,
> This coward with pathetic voice
> Who craves for ease, and rest, and joys;
>
> "Myself, archtraitor to myself;
> My hollowest friend, my deadliest foe,
> My clog whatever road I go.
>
> "Yet One there is can curb myself,
> Can roll the strangling load from me,
> Break off the yoke and set me free." [1]

It is the whole-souled acceptance of the new outlook on existence, the determination to deny the mere will to live, and to seek the whole in indifference to self-interest, that matters in religion. It is not victory, in the form of an outward good to be gained for the soul, that counts; it is in the effort itself and in its quality that deliverance is attained. The old outlook is superseded and a new one adopted. To some men this new outlook comes in the shape of the emotion that is intuitively known to be religious because of the meaning with which it is fraught, a meaning that emerges in the sense of its inherent value in comparison with all besides. To other men the new outlook arrives as the result of prolonged reflection or of intellectual insight. Yet others have something of both kinds. It is an error to suppose that a religious attitude

[1] Christina Rossetti, "Who shall deliver me?"

cannot have its origin in the conviction that comes of logic. Spinoza was above all a thinker, and his thinking brought him to conclusions sufficiently clear to enable God to be revealed under them. That the form was abstract in character was for a mind such as his no drawback.

But for most men and women religion, although, different from both, will always resemble philosophy less than it does art. For it depends for the majority on quality in creative imagery, and is, moreover, of a practical rather than of a theoretical nature. That is why people gain strength by worship in common in a visible church, consecrated to the God whose presence to them they there hope to realise through the stimulation of actual practice.

Taken in its largest meaning philosophy excludes no standpoint that belongs either to art or to religion. But its path is too steep and too hard to be available for the great majority. If its conclusions are to be made of general application this must be done through leaders of the people, in religion, in art, in knowledge generally, who are willing to teach and apply its lessons. I think that the greatest lesson that it can yield to-day is that the relativity of knowledge has among its consequences this, that all forms of knowledge are reconcilable if construed as aspects within one entirety. This is a lesson which we saw exemplified in physical science. We saw it also illustrated in biological science by the fitting in, when properly understood, of the methods of physics and chemistry with the recognition of the essence of organic life as to be sought in a controlling end. We traced the same principle, that of distinguishing realities into aspects as distinguished from entities, in psychology and the science of the state. It would be easy to follow out the lesson in the treatment of other subjects, such as economics. The statistician obtains his results by surveying the evidence of certain common purposes in great assemblages of human beings and abstracting attention from idiosyncrasies which do not affect the result yielded quantitatively by his method. He gets, for example, little information about moral qualities, but for such information he is not searching; it is irrelevant to a limited purpose.

But relativity is also, though not in a scientific form, characteristic of the standpoint of mankind, not only in

daily judging individuals but in judging other nations than their own. Of this we see daily constant and curious illustrations. From a book on *English Public Finance*, recently published by the New York Bankers' Trust Company, I take these sentences, from p. 15:

"Englishmen and their newspaper editors delight in heckling and finding fault with the Administration as we would say; the Government as they would say. But to the observer 3,000 miles away, quietly studying the figures without any other object than to get at the facts, the results obtained seem little short of marvellous. They could only be obtained in a country where patriotism runs so high that the people demand to be taxed and taxed heavily, as we are assured was the case in England during the course of the war."

Here is national relativity indeed. The writer has fixed his attention on the circumstances that the total expenditure of Great Britain in the six years of the war exceeded the aggregate expenditure of the preceding two and a quarter centuries, and that over 36 per cent of the total expenditure during the war was met out of revenue. His co-ordinates of reference differ from those of the average British critic at home.

It is, however, in the deeper meaning of the principle of relativity, that depending for its application on fundamental categories or conceptions transformative of reality, that we have been inquiring into its application to the problem of eternal life. In the scientific light which the principle so applied casts, we have seen how the problem arises of a life, not continued within time, but in its full nature independent of the time series. We drag down, even for the practical purposes of those immediately concerned, the quality of the conception and its power of transforming reality by raising it to another order, if we degrade it into unthinking identification with that of a resurrected or independent body continuing the old life as on earth. It is not too much to say that such a picture does not help religion but hinders it. So far as it is meant to symbolise death as the gateway to another life, it does so by metaphors which are as misleading as they are inadequate. For we saw in the earlier chapters that the

soul and the body are not distinct entities, but that the former is just the organism as it appears at a higher level in knowledge. Not the less on that account is the level one from which we get fuller reality, as full as that which the biologist finds in life. The undertaker and the executor have their proper and necessary functions, but in a lower order of the actual. The lesson of relativity warns us against the narrow view which takes the reality of different orders as meaning different entities competing with each other for the title to be accepted as actual. It is as separate aspects, finding their relation to each other within the whole that is visible only to a perfected knowledge, that their true significance is revealed. Of such a perfected whole we, who are more than we take ourselves to be, have glimpses in art, in religion, and in philosophy, in each case in a different way.

For us, whose world is in everyday life envisaged under the finite forms due to our conditioned faculties, a direct and pictorial presentation of the ultimate unreality of death is never completely accomplished. The veil of Maya, which imperfect understanding is ever weaving for us, by its abstractions leads us from the full truth. Yet, as symbols of more than they can express for such partial insight, the pictorial representations that are common have their use. They have a significance that carries us beyond them. They point us to reality at a higher level. On the plane of our lives as human beings in the world of nature, physical and social, we belong to the stream of the events which we experience. These events pass away, they pass inasmuch as the order to which they belong is one of succession. Return as events in this succession they cannot. For their essence consists in this, that they should lie in a time series. Now we have only to look at the fuller character, taken by itself, of such a series to see what the relation of events in it must ultimately prove to be. Segregated as it is in time, each instant succeeds the preceding one in its order. The earlier moment has gone finally when the second one follows it. It is only in a spatial relationship that they are recalled or are distinguishable. It is in the space system that it involves that each time series becomes actual for us otherwise than as a mere abstraction of reflection. The moments are not identical, but apart

from space they are indiscernible, and require to be sustained in memory and through distinctions which only spatial relations make possible. Leibnitz was not justified in speaking of the identity of indiscernibles. There may be indiscernibles without identity. What he says is only true of actual and individual objects, not of bare events which have received no setting or construction from reflection. When we die, therefore, in so far as we are mere objects in the world of nature, we have passed as the moment in the time series passes, excepting inasmuch as the picture constructed in reflection remains as a possession of the observer.

But this is only half of the truth. For the succession in the time series would be impossible excepting as held together and unified in the knowledge for which it is. That knowledge cannot itself be an object or event in the series, for it is only through it that the series has a possible existence. There are thus two factors implied in our experience of events in time, the known and the knower, and the latter, in so far as it is subject in this experience, is above the plane of the time series, just as it is, for the same reasons, not less above that of relationship in space. The factors are not separable as events in experience. But it is the distinction between them which explains the meaning of our recognition of the triumph of the spirit over the grave, and its significance for knowledge. We are once more face to face with the consequences of the principle of relativity.

Now if we apply this lesson, the first thing that strikes us is that we find in it a justification for what many of those whom we name the best believe in with their whole souls, the significance of a higher life that is beyond the reach of the all-severing wave of time. The pictorial language in which this idea is expressed is the language of finite knowledge. It is therefore inadequate, for its material belongs to the domain of an order in knowledge that is not the highest. But, by the faith which is the sense of an order yet higher, or in a mysticism which may be just that faith under another name, the pictures framed are invested with a meaning which gives them a title to recognition as symbolic. Just as the printer's ink is the symbol of the poet's inspiration, and has generally interest for us as if real in no other sense, so the imperfect effort

to express what cannot be adequately expressed may conduct us to a reality beyond its outward form. In order to make intelligible how this can be so, the principle of the relativity of knowledge has to be invoked. But the plain man does not need to understand. He is satisfied with what the direct presentation presses on him, a picture that gives him the sense of peace and contentment and that satisfies his highest longing.

In an often-quoted sentence in the preface to his *Appearance and Reality*, Mr. Bradley throws out a suggestion. "Metaphysics," he says, "is the finding of bad reasons for what we believe upon instinct, but to find these reasons is no less an instinct." In these words he guards himself against a possible accusation of taking his subject too seriously. So long as metaphysics is separated from the rest of the body of scientific knowledge the metaphysician is apt to lay himself open to this suspicion. But if philosophy be nothing segregated from the remainder of the whole system of knowledge, but applies a principle which it holds in common with every branch of that system, then it hardly requires defence more than other modes of the application of knowledge do. It is true that its standard is not that of measurement, but in this it does not stand alone, and it has at least all the justification for its conclusions that criticism has in literature. But Mr. Bradley, in what he says, is really warning us against pedantry, the undue exaltation of the abstract mind. His warning is one which those who are disposed to regard lightly the faith of simple minds would do well to bear in remembrance. For that faith is in itself a correction of abstractions. It is the sense of the fuller significance of experience.

The dying man may have before him no picture that is clear excepting one of himself as passing away from a world which he and others imagine as continuing after him. It does not disturb him that this should be so. For he has the sense that more is signified. This sense may come to him in forms that vary. The firm conclusions of a life spent in thought may bring it. Or it may be gained in the consciousness that death has been accepted because it was a duty to encounter it. Or, again, it may come, as it so often comes, to the simple mind which religious feeling has permeated. If the dying man is of

this latter sort he may be filled with a faith that assures him that his "Redeemer liveth." If it be so he is strong and victorious not less than is he who holds as his final thought that it is within his own mind that the world and himself as in it are passing, and that in his grasp of this fact he is above it and is at one with the eternal. So it is that when his simple creed, pictorial it may be, but symbolical of fuller reality and deeper significance, bids the humblest soul in his greatest and last extremity be assured that he is in the presence of God, it may be that his is an insight differing in form only from that of the profoundest thinker.

Such seems to be the value of what Wordsworth has called our "Intimations of Immortality." Let there be no self-deception as to what they mean, and no taking of them to indicate some interruption of a kind that is miraculous of the order of experience in space and time. The miraculous is what violates the principles of the order to which it belongs. What I am speaking of imports no such violation. Things remain, in the orders in which they are recognised as existing, just what they seem to be. But their significance as existing is changed with change in standpoint, and their reality in consequence not only has an altered meaning, but *is* an altered reality, transformed in the new order to which it now belongs. This conclusion should occasion us in point of principle no more misgiving than the conclusion that there are different systems of space and time, according with differences in systems of reference.

The case of the self in its aspect of externality is divergent from these last referred to, but in circumstances only. In such illustrations as those physical instances we can by reflection render our measurements congruent for knowledge if we realise that they appear as they do because of the standpoint adopted. We have, for example, assumed ourselves to be at rest and to be at liberty to employ a certain set of co-ordinates of reference with which we are familiarly associated. But these turn out to have been co-ordinates forming only one out of other possible sets. In the same way, although we can use mechanistic conceptions to interpret the living organism physically and chemically as being an assemblage of molecules, isolated and merely external to one another, we have made the

organism have this character by our employment of these conceptions, and we may have to give this standpoint up, as being neither exhaustive nor adequate, if we are to get at the character of the true facts of life. In this case the change of standpoint is a change in the categories or conceptions under which we direct attention.

It is this latter kind of readjustment, not of the standard of reference in measurement of externality, but of the category employed, that we have to make if we would get at reality in what we name as eternal life or as God. But in all cases the principle is the same. For it is that the standpoint requires critical examination before we conclude that it is adequate for the order of existence in which we are searching for the real. We may discover that we have got from it only what relatively signifies reality, and that for the interpretation of the individual in the perfection of his existence an outlook and a set of conceptions more completely comprehensive is necessary.

The capacity of man to interpret is unlimited in its range, because the range of mind as such even in human form is unlimited in its power of framing general conceptions. In art and religion mind may be brought, apparently directly and not only mediately, into the pictorial consciousness of what is highest in its own nature. That is because feeling and thinking are not really separate faculties. Were we untrammelled by the physical organs through which mind is actual in us we should not find it so hard to realise a relation which demands expression even in abstract thinking through images which thought has to use. So far, again, as feeling is concerned it is fraught with the values implied and recognised in it. It is because of this defectiveness of form, inherent in all interpretation and the outcome of our finite natures, that things are taken to be no more than they seem for the limited purposes which direct our attention in everyday matters. But we are capable of more and we recognise more as being actual. If death cannot appear from the outlook of everyday life to be other than what judged from that outlook it in truth is, a calamity which may entail for those left behind suffering as well as grief, at least it has the very different aspect of which I have now spoken.

Often, too, we become aware that their deaths have been essential for giving full effect to the life-work of the

greatest among us. It was so with Jesus, with Cæsar, with Nelson, with countless others who have yielded up their lives as individual men in order to make those of others better. The personalities of these great ones survive in the results of their work, and their deaths have been required to produce the lasting results of that work. Surely it is as wrong to think of them as the mere victims of regrettable forces of blind nature as it would be to desire that they should have lived on, to the detriment, it might have been, of the causes to which they had consecrated their earthly existence.

CHAPTER XX

CONCLUDING REFLECTIONS

The endeavour to accomplish the purpose described in the first chapter has now been made. It has not been merely in its direct bearing on particular forms of knowledge that the doctrine of degrees has seemed to afford new light. It teaches a yet more general lesson. It furnishes a fresh outlook on the apparent conflicts disclosed throughout the story of reflective thought. It enlarges our conception of truth. We follow the development of human knowledge with a deeper insight into its real process. For we see in its result one which has been accomplishing itself continuously, and which is founded on a principle. The principle is one which teaches us to read the history of philosophy as evolving progressively a lasting view of the foundation of reality, a view remaining substantially constant in varying forms, despite temporary changes due to alteration in modes of approach attributable to periods and circumstances. Variations there have been, without doubt, and deflections from time to time. But these are inseparable from the freedom of human personality to concentrate for its own purposes on what accords with its bent at the moment. The larger view has often been temporarily displaced, but always to return clad anew, to reassert its power over the human mind. In the main an obvious thread has remained unbroken, and is seen to have done so if the progress is surveyed from beginning to end and as a whole. Science and religion appear, in the course of this progress, not as reconciled, but as in no antagonism, inasmuch as they are concerned with different standpoints. Their results, therefore, are discovered not to conflict with each other, if studied, as they should be studied, in the light cast by relativity.

The field of knowledge has been surveyed and its general character has been examined. The system of knowledge as

an entirety has seemed in the end to disclose itself as being an ultimate fact, within which fall both the self and the world of nature by which in our daily outlook the self is confronted. Analysis reveals both of these as simply forms in which knowledge is self-presented, and in which it is before itself. To know means more than to look out through a window at some reality of a different character. For to be independent and actual has no significance outside the form in which things appear as we apprehend them in even the knowledge that is finite.

On the other hand, our minds are just as little centres of activity creative of objects apart from them in time and space. The mind and its objects are both actual, and as they appear for us they are correlative and co-ordinate. But they not the less fall within the entirety, in which they have their ultimate foundation. Within this whole they are distinguished, and the distinction is itself a creature of reflection. For it seems to have no meaning that is intelligible on any other footing. *Cogito, sum.* In knowing we are, and the objects distinguished from us and from each other also are. In each case the meaning and the reality are inseparable and have the same character.

Within the entirety nothing has significance excepting what the activity of thought gives to it. To have no meaning and not to exist appear to be the same thing. The activity of thought is thus the source of what we call reality. It establishes what are conventionally termed entities, but are really the outcome of standpoints. Modern science, as we have seen, indicates this conclusion as definitely as does metaphysics. It is our systems of reference and the categories we employ in directing and concentrating attention that give birth for us to the varying forms which truth and reality assume. Such truth and reality have their foundation in these forms. But they are not subjective creations. They stand for just what we mean when we speak among ourselves of the actual. They characterise things themselves and not only our thoughts about them, and events are real in and through them. But truth and reality are relative, inasmuch as they are thus the outcome of cardinal standpoints in knowledge. Along with each of such particular standpoints there are always others that have title deeds of equal validity. It is only relatively that

for any one standpoint a title can be asserted for its result in a form that is exclusive. The final and complete truth cannot be less than a systematic whole of knowledge within which all particular and partial outlooks have their places as levels or degrees in knowledge. It is therefore from above and not from underneath, from what is concrete and individual, and not from abstractions only derivative from it, that we must seek to inquire, if we would strive to realise the ideal of bringing the whole under a final and adequate conception, and of so attaining to full truth.

All this presses itself on us as the outcome of the principle discussed in these pages, a principle brought to the light at times more and at times less perfectly in both ancient and modern thought. Its prominence to-day is perhaps greatest in the domain of science. On science it is conferring a new and extended significance, by the introduction of the conception of relativity into scientific method.

For practice the general result, if it be true, must have a bearing resembling what it possesses for theory. Society consists of an assemblage of individuals whose purposes show the correspondence considered in the chapter on the state. But these individuals differ from each other in the details of both purpose and outlook. The differences are as essential for the life of society as is the identity on which correspondence is based. It is well that this should be so. Were it otherwise, that life would be at a dead level and progress would not exist. Among animals the individuals of the species resemble each other the more the lower we go. Between the individual bees belonging to a hive it is difficult to detect any divergence in conduct, and in a less degree this is true of horses and dogs. But in mankind, with whom the power of free reflection is the distinguishing characteristic, a variety corresponding to the presence of individual freedom of mind is obvious. The more civilised is man the greater is the divergence between individual characters. We see this best if we compare the activity of a highly intellectual nation with that of a savage people. In their works we know them as they are.

Purpose is determined by conception, and conception is therefore of commanding importance. Its formation needs stimulation and guidance, and it is the function of the

teacher to provide this. The national system of education is thus neither an accident nor a luxury. It is a necessity, and it is increasingly recognised to be such as a nation grows in stature.

But such education is not only of one type, nor does it proceed from any single source. Its genesis is the desire of freedom in thought and action, freedom in which man is indeed hampered by the physical structure that is the organ in which mind expresses itself, but is in respect of his brain power far less restricted than are the lower animals. These we can train only in a comparatively small degree, but man we can educate without any definite limit because of the range of his reflective capacity. To the might of thought no secret of the universe is wholly impenetrable, man's station in nature and the restricted range of his organs notwithstanding. For thought is akin in character to the objects it thinks, and, as the result of the correspondence of reality with knowledge, mind recognises no barrier as absolute.

We learn, therefore, in ways the variety of which is as great as the variety of our souls, and we draw the life-giving water of knowledge from an infinity of wells. For one it comes in the shape of increasing aptitude for action and success in dominating his environment. To another it comes in power gained by solitary reflection. To a different type of mind it arrives as success in social relations. But whether it be in the field, or in the study, or in the meeting-place, what is attained in the end comes through some sort of knowledge. This may have the shape of fresh ideas of a general type, selected and arranged for application, or it may take the shape of that semi-instinctive aptitude for which the name experience is sometimes appropriated, a kind of experience which is the outcome of the correction of error by trial, and is largely a result of developed disposition, inborn or acquired.

Though men and women are endowed by nature unequally, and always depend to some extent for the chances of their minds as much as of their bodies on the accident of circumstances, in the individual cases of the majority there is always much service that can be rendered by others. The mind is self-developing, but its power of self-development comes to it through its objects and ideas. In its freedom to select these it needs guidance, intellectual,

social, and spiritual. To give such guidance is the work of the leader who can teach.

But the blind cannot lead the blind aright, and the teachers must have their eyes open and see as much as is practicable of the paths along which they are to lead. There is required, accordingly, for the guidance of the teachers themselves, higher leadership of the kind which can stimulate towards reliable ideals in science, in art, in religion, and in philosophy. For the relativity of their outlooks has to be realised by all engaged in branches of knowledge with which other branches may have to be brought into relation. It is here that the principle of relativity has its greatest application. It shows that truth is of different varieties in the different orders of knowledge. It insists, as the consequence, that toleration is not only expedient but necessary. It is not by restraining freedom of thought, or even freedom of action, further than restraint on freedom of action is required in the interest of the just liberties of others, that the highest level of well-being is to be reached. It is by that enlargement of the individual spirit and its outlook which lets us see how much we must know before we can be sure that we know at all.

Democracy, that is to say, the rule of those who have been selected to be directly responsible to the citizens as a whole and to conform to the general will of the nation, in the sense in which that will was interpreted in the chapter on the state, is at present tending to become a fact all the world over. We have, therefore, to consider more than ever before how to implant in the mind of the people the inclination to call for the development of intelligent interest and of the individuality that is of its essence. I need hardly say again that mind I take to include not less what is spiritual than what is interpreted through reflective capacity only. We have to teach our people, if we would maintain the great station of our own country among the other nations of the earth, that they must see things steadily and see them whole. If we are to do this we must make sure that our statesmen, our local leaders, our teachers and our preachers, have themselves something of the mind that is really synoptic, and are in some degree fitted to speak of eternity as well as of time.

In certain respects the attainment of such a result cannot but depend on a general outlook which must in the end rest on what our best thinkers can provide for us. If the principle of relativity in its broadest sense be a true one it is capable of furnishing a lesson for general practice which may help to guide our thinkers in their work, work which must be shaped by objectives of high quality, which they can in common set before themselves. In the past we have been distracted, probably unnecessarily, by differences and controversies on questions of minor importance. To-day the state of the world after a great war suggests at least the possibility of a better state of things, in which men and women may, throughout their inevitable differences, be in agreement about some things that are in common needful. For their insistent questionings show them to have been stirred at last by a great convulsion of soul, and to be serious as they were not before war broke upon them.

It is this seriousness of mind that those who are well-to-do have to encourage by their example. I need hardly say that I do not mean that there is no room for lightness of touch. But I think that we are deficient in attention to concentration of high purpose. It is true that temperament varies in localities, and gives rise to provincial variations that are largely the results of tradition, and sometimes to dispositions that have grown under the soporific influence of surroundings. These are everywhere apparent. Yet such is the variety of the possible ways in which human beings can excel that there is room in our society for every sort of activity. "Die Zeit," as Goethe used to say, "ist unendlich lang!" We are most of us capable of almost unlimited application if we choose to make use of our particular opportunities. But, then, art also is long, and life after all has an end. What we have to dread is, not so much contrast between the forms of possible activity, as inertness. Self-directed activity is essential to success in every shape, and energy can only be properly applied if it is inspired by sustained purpose.

The reflective habit is thus highly desirable in the interests of our democracy. How much misery, through strikes and lock-outs and unrest, would not have been averted had there been enough of reflection! The

necessity for reflection is not only on one side. If the workman does not always reflect neither does the employer. The want of a broad outlook on the relations of labour to capital has produced and is producing intensification of an undesirable sense of difference in advantages. To the narrowness of the existing outlook as it appears to the working classes we are only beginning to become alive, and we still dwell on the evils of class conflicts as though the responsibility for them were mainly on one side.

It is true that, as Burke said long ago, " the nature of man is intricate ; the objects of society are of the greatest possible complexity ; and therefore no simple disposition or direction of power can be suitable either to man's nature or to the quality of his affairs." He said this, with his genius for conveying a general principle pictorially, with reference to the affairs of his own period. But his words are not the less profoundly applicable to the labour question as it is with us to-day. It is no easy problem to devise in this connection a means by which ends, the accomplishment of all of which is essential in the interest of the nation, can be rapidly attained. No principle abstractly applied will solve the difficulties that press on us. As Burke says elsewhere, " no rational man ever did govern himself by abstractions and universals." Again, in another connection, he has a pregnant utterance, equally of a general application. " The question with me is not whether you have a right to render your people miserable, but whether it is not your interest to make them happy. The manners and principles of those who lead, not of those who are governed . . . will ever determine the strength or weakness and therefore the continuance or dissolution of a state." Reminders such as these ought never to be out of memory in our attempts at dealing with the social problem that promises to press itself most on us in the near future, that of the industrial life of this nation. It will be our own responsibility if the appearance of things becomes yet more menacing. For our democracy is not naturally revolutionary. It is in truth miscellaneous in its composition and conservative in its tone. There need be no fear if we are careful in time, and do not by our neglect allow sparks to kindle into flames. What we all require, in every class of society, is the wider outlook from which is visible the danger, together with what is necessary

to avert it. We have to educate those who by their numbers are our masters when the ballot takes place, and we have also to educate ourselves. Not wholly without reason are the working classes bidding their would-be physicians to heal themselves. It is not good for any of us that there should exist the gaps in mental life that exist to-day. Out of these gaps arise discontent and unrest.

The world is a better world than it once was. Slavery is gone, and Christianity has established the infinite worth of the individual and the value for eternity of the humblest soul. There has been progress in many directions. It is progress that is so far not accepted as being sufficient. That is hardly in itself a cause for anxiety. It is of the nature of mind never to be quiescent, and in its dialectic it is ever passing from one outlook to another that is different. The mind of a people is in this respect like the mind of the individual man. No political faith can remain static and live. The life of such faith lies in its development. It is a mistake to look back to a period that has passed and to point to the tone and temper of its leaders as having been mistaken, merely because we observe some apparent narrowness. The tone and temper may not have been narrow as estimated by reference to the purposes required by the period. We needed the free trade movement in this country at the time when it came. Most of us do not in the least desire to go back on what that movement accomplished, or to question the great and new service it rendered in its period. But we say that here too relativity comes in, and that what was then indeed wisdom was yet only its beginning and not its end. To-day the problem of the production and distribution of the fruits of industry assumes a new and different form. That does not show that the great principle of a past generation was in that generation wrong or that it is wrong now. It only proves that its truth, while truth according to the standards of the time, and perhaps still truth for our time also, is not enough to cover the field of the outlook in the days in which we live. There is a new demand in our period for interference with individual liberty in the interests of society as a whole. It may or may not be justified. But in any case the question is one that must be answered from a further system of reference, and to which the answer may prove an answer which we are

bound to accept as admissible where our forefathers would have rejected it. The mind of the state never stands still, any more than does the mind of the individual. We have therefore not only to watch but to think, and to take heed lest our social organism gets encrusted with the products of an environment that is no longer suited to it.

I have made this reference to the public life of nations because it is germane to the principal subject under discussion. The opinions, collective as well as individual, of mankind are profoundly dependent on relativity in outlook. Such relativity is a secondary consequence of the deeper-lying relativity of knowledge in its general character, and in practical life is not dissimilar in the fashion of its working out. But an element of subjectivity, an influence due to individual personality, always enters into what we call opinion to distinguish it from full knowledge. The two are related by the fact that in each reference to some standard is the condition of truth. But in the case of the knowledge that is the medium within which alone experience of any kind can really emerge, the principle applies in a fashion that goes to the very roots of reality. It is the same current, but when we turn to relativity in the details of human intercourse we find that the current has overflowed its banks and become spread out so much that its channels are no longer clearly marked. It has lost its definite appearance as the main stream.

The survey endeavoured in this volume now approaches its conclusion. There is a final question which the reader may ask, since the end is in sight. Assuming the principle of relativity to mean all that has been said, what guidance does it offer for the conduct of our individual lives? I do not think that the question is a difficult one to answer. The real lesson which the principle of the relativity of knowledge teaches us is always to remember that there are different orders in which both our knowledge and the reality it seeks have differing forms. These orders we must be careful to distinguish and not to confuse. We must keep ourselves aware that truth in terms of one order may not necessarily be a sufficient guide in the search for truth in another one. We have, in other words, to be critical of our categories. As an aid to our practice, the principle points us in a direction where we may possess our souls with tranquillity and courage. We stand

warned against " other-worldliness " in a multitude of concealed forms. We are protected, too, if the doctrine be well-founded, against certain spectres which obtrude themselves in the pilgrim's path. Materialism, scepticism, and obscurantism alike vanish. The real is there, but it is akin in its nature to our own minds, and it is not terrifying. Death loses much of its sting and the grave of its victory. For we have not only the freedom that is of the essence of mind, but we are encouraged to abstract and withdraw ourselves from the apparent overwhelmingness of pain and even of death itself. Such things cease to be of the old importance when they lose the appearance of final reality.

There may come to us, too, contentment of spirit, and a peace which passes our everyday understanding. We grow in tolerance, for we see that it is in expression rather than in intention that our fellow-men are narrow. We realise that we are all of us more, even in moments of deep depression, than we appear to ourselves to be, and that humanity extends beyond the limits that are assigned even by itself to itself. Our disposition to be gentle to those who may seem to misinterpret us because of dissent from our outlook on life grows with the recognition that, as Spinoza wrote two hundred and fifty years ago, in his answer to the letter offering him refuge in a chair at Heidelberg from his theological persecutors, " religious dissensions arise not so much from the ardour of men's zeal for religion itself, as from their various dispositions and love of contradiction, which leads them into a habit of decrying and condemning everything, however justly it be said." Of Spinoza himself Renan has without exaggeration spoken as " l'homme qui eut à son heure la plus haute conscience du divin." His life and his attitude of soul remain a lesson of high value for those who seek to believe as he did, *Est Deus in nobis*. Words like these do not call for the recognition of what is supernatural. They relate to what is in final truth natural, and all they claim at our hands is the recognition that what is natural falls within differing orders of reflection, all of which are found to be in ultimate harmony. It is this that seems to have been in substance the creed, varying in expression but ever indicative of a common faith, proclaimed by some of the greatest guides of mankind in ancient and in modern times. It is a creed that if it be true helps

those who can make it their own to dispel obscurities, and to lighten for themselves and for others the burden and the apparent mystery of human life. It is a creed that stimulates the practice of unselfishness in social and religious life, interpreted as fully harmonising with the dictates of philosophical thought. "If any man shall do His will, he shall know of the doctrine."

INDEX

Absolute, an, 387, 390
Action at a distance, 93, 134
Active reason, 250
Alexander, Professor, 273 *et seq.*
American bankers, 414
American philosophy, 313
Aristotle, 8, 243 *et seq.*, 262, 345, 347, 348
Arithmetic, 281
Arnold, Matthew, 8
Art, 4, 11, 12, 13, 244, 411
Assumptions, unconscious, 17
Astronomer Royal, the, 52

Bacon, Francis, 14, 36, 253, 372
Bergson, 66, 91, 118, 265, 271, 310 *et seq.*, 317, 333, 337, 359
Berkeley, Bishop, 9, 21, 30, 130, 268, 293
Berlin engineer, an, on Energy and Relativity, 57, 58
Bifurcation of Nature, theory of, 17
Biology, 10, 12, 124, 125, 126, 130, 133, 284
Bolland, Professor, 255
Bosanquet, Professor, 201, 206, 207, 211, 212, 214, 326, 331, 340
Bosanquet, Mrs., 408
Bradley, F. H., 201, 206, 207 *et seq.*, 214, 256, 315, 340, 417
British Astronomical Expedition of 1919, 52
Brontë, Emily, 406
Browning, Robert, 404
Burke, Edmund, 427

Cæsar, 420
Caird, Edward, 246, 255
Carr, Professor Wildon, 130, 317
Categories, 272
Cause, 125, 135
Centrifugal force, 121
Chemistry, 142
Christianity, 3, 8, 428
Cogredience, 78
Coincidence, 99, 101
Common Sensibles, the, 251
Compresence, 269
Congruence, 77, 79, 80
Cook, Eliza, 11
Cunningham, Professor Watts, 313 *et seq.*, 320, 323

Dante, 11, 347
Darwin, Charles, 228
Death, 226, 409
Degrees in knowledge and reality, 180, 199
Deism, 386
Democracy, 4, 425
Dialectic, 235

Eclipse of 1919, the, 52
Eddington, Professor, 81, 96, 100, 105, 109, 123, 124, 128
Einstein, 33, 34, 39, 43, 45, 51, 52, 55, 56, 58, 82 *et seq.*, 95, 96, 103, 106, 107, 114, 121, 123, 129, 132, 139, 140, 191, 275, 276
End, 135
Erdmann, Professor J. E., 255
Euclidean space, 107
Extensive abstraction, method of 71

Faith, 5
Faust, 362 *et seq.*
Finite centres of knowledge, 141, 156, 178, 195
Francé, R. N., 305
Freundlich, 62, 110

Galileo, 130
Gauss, 59, 97, 118
Generality, 49
Geodesic line, 95
Goethe, 11, 187, 231, 335, 343, 365, 391, 399, 426
Good form, 356
Göttingen, 118

Gravitation, 93
Greeks, the, 14
Green, T. H., 318, 340

Hamilton, Sir William, 35, 110
Hegel, 60, 225, 261, 327, 332, 334 *et seq.*, 375, 391
Heredity, 134
Holmes, Mr. Justice, 284
Homer, 11
Hume, David, 9, 21, 268, 293, 301

Idealism, subjective, 9
Identity, personal, 155, 159, 160, 163
Inertia, 93
Inge, Dr., 257
"It," the, 27, 30

Jena, 343
Jesus, 393, 420
John the Baptist, 187
Johnson, Dr., 30
Julian, the Emperor, 264

Kant, 21, 22, 23, 26, 27, 33, 38, 60, 65, 109, 130, 138, 139, 296 *et seq.*, 303, 311, 333, 337
Knowledge, 6, 29, 141, 144, 150, 167

Law, 355
Leadership, the Higher, 425
League of Nations, 378
Leibnitz, 11, 33, 130, 157, 416
Life, nature of, 93, 127, 134, 160, 165
Light, velocity of, 45, 82, 83, 91
Literature, 4
Locke, John, 20, 21, 292 *et seq.*
Lord Chancellor, a Victorian, 18
Lucretius, 263

Mackenna, Stephen, 257
Mathematics, 16, 39, 40, 48, 53, 179
Matter, 222
Maxwell, Clerk, 71
Meaning, 21, 168, 179
Measurement, 14
Meresjowski, 264
Metaphors, 225
Mind, 127, 132, 136, 160, 172, 175, 290
Minkowski, 94, 101, 120, 191
Moltke, 336
Monads, 158
Morality, 354
Mysticism, 231

Napoleon, 187, 343
Nation, nature of a, 375
Nature, 17, 20
Nelson, 420
New Realism, 66, 137, 243, 265 *et seq.*
Number, 279

Orders in reflection, 32
Organism, the living, 31

Paley, 373
Parallelism, 73
Parliament, 370
Particular, 47, 48
Pathway to Reality, preface
Perception, representative, 35, 110
Perpendicularity, 79
Personality, 227
Philosophy, history of, 8, 9
Physicists, what they really observe, 47, 93
Planck, Max, 61, 111, 305
Plato, 8, 137, 244, 245, 348
Plotinus, 8, 243, 257 *et seq.*, 262
Poetry, 10
Political opinion, 4
Politics, 3
Porphyry, 260
Pragmatism, 143
Pringle-Pattison, Professor, 206 212, 213, 214
Progress, 10; in philosophy, 271
Protagoras, 37
Prussian Constitution, 334, 346

Quanta theory, 111

Realism and Idealism, their convergence, 239
Reformer, task of the, 6
Reid, Thomas, 268, 295
Relativity, various meanings of, 34
Religion, 3, 393, 412, 413
Renaissance, 8
Renan, 375, 430
Riemann, 59, 80, 110, 120
Rossetti, Christina, 412
Rotation, 121
Russell, Bertrand, 63, 277 *et seq.*

Sabine, Professor, 321
Scepticism, 21
Schlick, Professor, 59, 100, 110
Schopenhauer, 303 *et seq.*, 333, 337

Science, 16 *et seq.*
Self, 29, 149 *et seq.*, 152, 169, 171
Sellien, Ewald, 60, 62
Shakespeare, 11
Shortest path, 98
Simultaneity, 105
Sittlichkeit, 378
Sovereignty, 370, 377, 385
Space, 94
Space and Time, relativity of their reality, 83
Space-time continuum, 73
Spinoza, 430
Spiritualism, 3, 407, 410
State, the, 377, 379, 381
Strauss, David, 3
Symbols, 16, 17

Teleology, 327
Tensors, 100 *et seq.*
Terminology, metaphysical, 179
Time, 94, 153, 230, 327, 329
Truth, 10, 11, 12, 13, 14, 15, 132
Tyndall, 263

Universe, whether finite, 122

Value, 10, 15, 351, 353, 361
Victorians, the, 17, 18, 19, 64

Wallace, Professor, 340
War, the Great, 3, 5
Whitehead, Professor, 17, 39, 63 *et seq.*, 105, 112 *et seq.*, 123, 125
Whittaker, Thomas, 257, 259
Will, the, 307, 353
Will, the general, 353, 367
Wordsworth, 11, 397, 398
World-line, 94, 101

Zeller, 246, 248, 255
Zelter, 336, 363

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